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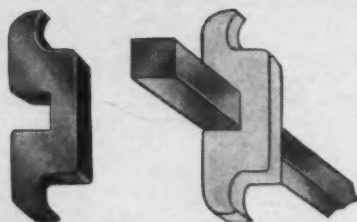


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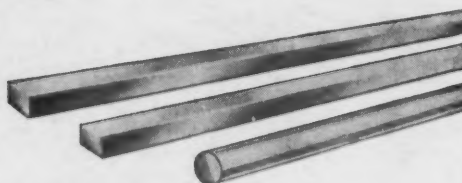
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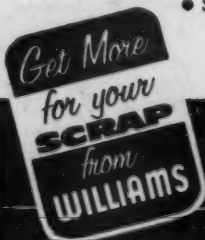
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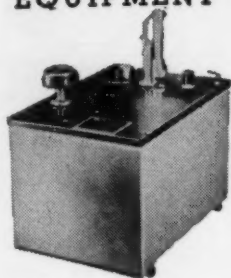
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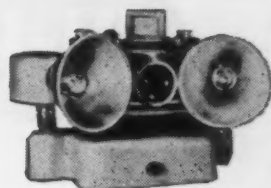
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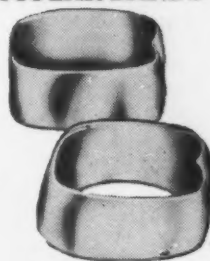
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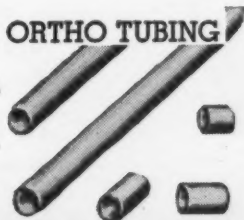
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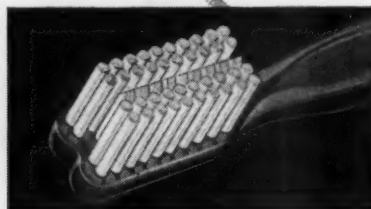
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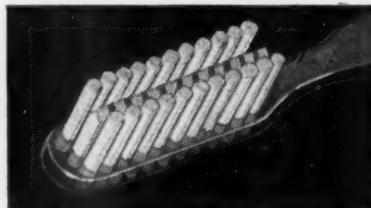
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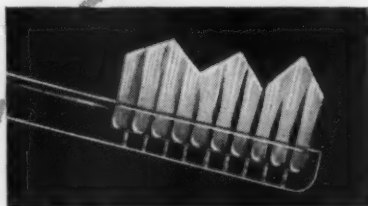
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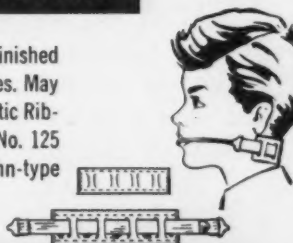
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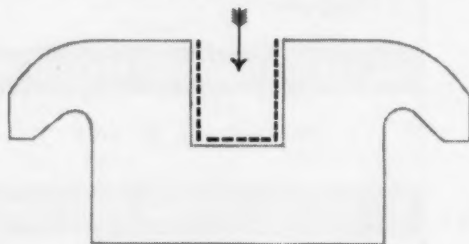
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A FAST-GROWING TREND: THE .018 EDGEWISE BRACKET TECHNIQUE

IN ORTHODONTICS as in politics, power is desirable only when it can be controlled. Following the trend toward the use of lighter, more resilient arch wires, Unitek introduced the .018 Edgewise Bracket more than one year ago. Since that time, both the materials and the theory of usage have been thoroughly field tested and approved. As a result, more and more orthodontists are converting their practices to the .018 technique. Many report that using appliances of this size simplifies and shortens treatment time by taking advantage of light, resilient, modern chrome alloy wires. Careful calculations have established the .018 size as being equivalent in strength and in power-storing ability to the size .022 x .028 in precious metals. An important difference, however, is the fact that today's improved chrome alloy wires are more resilient. As a result, they deliver their energy more evenly over a greater distance. This necessitates fewer adjustments while providing faster tooth movement and better tissue tolerance.

Narrower slot provides precise fit for .018 x .025 wire



The history and advantages of this advanced Edgewise technique are discussed in the following excerpt from an unpublished manuscript by Dr. Cecil C. Steiner:

"Early orthodontic appliances were heavy, cumbersome, non-yielding devices which often imposed exorbitant non-resilient forces upon the teeth. These gradually gave way to lighter, more elastic devices that delivered more gentle forces. This trend is exemplified by considering the old jack-screw and other equally brutal devices that preceded it. The stiff and cumbersome Angle "E" arch also had wide usage. It, in turn, was largely replaced by the .022 x .036 rectangular ribbon arch appliance. Since then the Edgewise arch appliance designed for arch wires size .022 x .028 has found great favor. It was in this form that Dr. Angle presented the appliance to the profession.

After Dr. Angle's death, the Edgewise appliance bracket was modified in both design and in material in such a way as to make it capable of delivering stronger forces from the arch wire. It was, in fact, designed for and was capable of delivering all of the forces that the precious metal arches of the day could deliver without becoming distorted themselves.

Then came the marked improvement in the qualities of chrome alloys as band and arch material. Arches made of these alloys were stronger and stiffer and possessed a higher modulus of elasticity. They were capable of delivering more power. They have been widely adopted and used. The precious metal brackets were not designed to stand all of the force that

these chrome alloy arches can deliver, and experience has proven that they failed to do so in many cases. As a result, we have seen an increasing number of double brackets and double-width brackets used in an attempt to get better tipping and torquing action. It is my opinion that what we have needed is not the ability to deliver more power but instead to deliver power under better control. I also believe that when properly controlled and delivered, ample power to move teeth effectively can be stored and delivered in lighter and more resilient arch wires.

Previous to 1933, and for a period of about 3 years, we used specially-made Edgewise brackets with a slot size of .018 x .028. In these slots, arch wires of both precious metals and chrome alloys of that day were used. By the use of these appliances, the average time of treatment was lessened by nearly 3 months, as compared to the time of treatment when using the standard .022 x .028 slot and equivalent arch wires. We discontinued the use of this size bracket because of the shortcomings of the metallurgy of the arch wires of that period.

Smaller arch wires deliver less strain upon brackets and stand less chance of distorting them. Undistorted brackets deliver the power that is stored in the arch wire, accurately. A wire of smaller dimension delivers stored power over a much greater distance than does a larger one. The ratio of the size to the distance that the power is delivered is approximately as one to four (1:4).

A given amount of force will distort an .018 x .025 arch wire approximately twice as far as it will one of .022 x .028, when the force is applied against its thin dimensions. That means that a given amount of power is stored over about twice the distance when a smaller wire is used.

This, too, is interesting. A chrome alloy Edgewise arch wire of the dimensions .018 x .025 has about the same stiffness and strength as does the .022 x .028 precious metal arches originally suggested by Dr. Angle, but with this important exception: they will store and deliver that power over a much greater distance without distortion and do it more continuously and more evenly.

It was for these reasons that about 2 years ago we prevailed upon the Unitek company to furnish us with modern chrome alloy brackets with a slot size of .018 x .025 for retesting. Again, the time of treatment was reduced — this time more drastically, and that was doubtless because of the improvement of chrome alloys. Less soreness was experienced by the patients, and we surmise that there has been better tissue tolerance of the treatment that was carried on with these lighter appliances.

I am sure that the improvement and the further development of chrome alloys for the construction of orthodontic appliances now indicates the production and the fair trial of the Edgewise arch appliances with arch wires of a reduced dimension. After long and careful trials, we suggest the use of brackets with the slot size of .018 x .025 when used with chrome alloy arch wires."

BY CECIL C. STEINER, D.D.S.

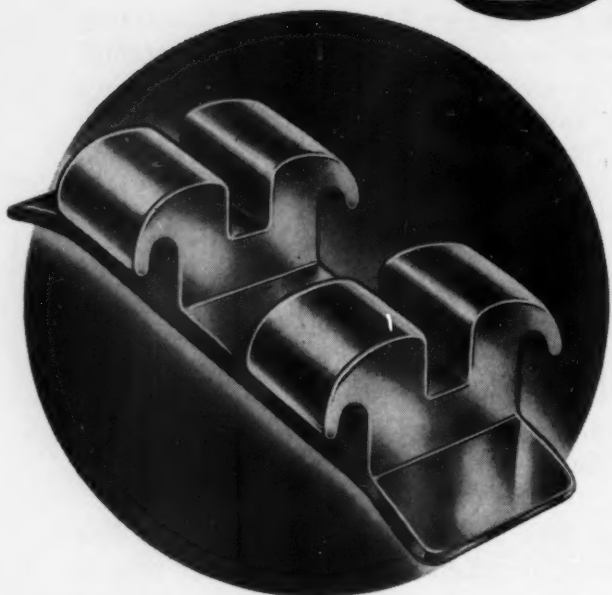
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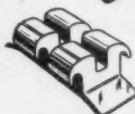
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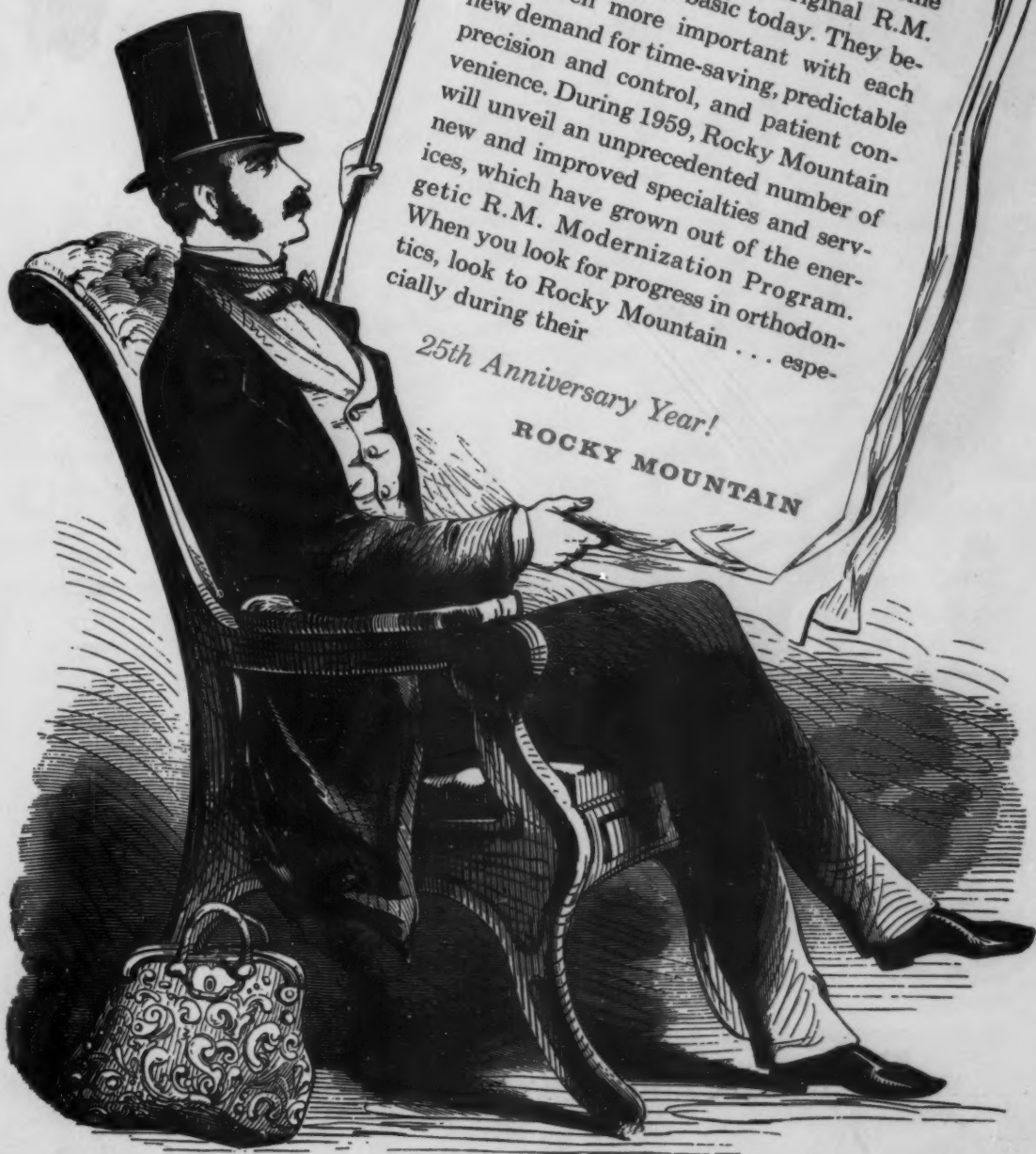
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 assurance for faster, more
 uniform treatment results."

American Journal
of
ORTHODONTICS

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VOL. 45

SEPTEMBER, 1959

No. 9

Original Articles

THE PHILOSOPHY OF ORTHODONTIC DIAGNOSIS

WENDELL L. WYLIE, M.S., D.D.S., SAN FRANCISCO, CALIF.

OUR program chairman has been generous beyond the call of duty. He has supplied an outline which almost anyone would be glad to accept, but with it a title which some would perhaps reject. It contains not one but two doses of "semantic itching powder"—*philosophy* and *diagnosis*.

Familiar to all of us is the orthodontist in the throes of authorship who wants to go beyond mere techniques and selects for his title something like "The Philosophy of the Intermaxillary Elastic." This is vastly irritating to those of his readers who want the word "philosophy" reserved for loftier, albeit more obscure, subject matter.

Whether or not orthodontic diagnosis is lofty is a question that we had better avoid; insofar as possible, we should see that it is not obscure. The business of collecting and evaluating information concerning the patient should be for the primary purpose of rendering the best possible orthodontic care. There are some objectives which are not orthodontics per se; we should examine for dental caries and other less frequently occurring pathologic entities, not because we will set them straight but because we cannot be accessories to neglect. Everything that we do under the heading of "diagnosis" should carry implicitly the connotation of meaningful actions. The accumulation of information which cannot affect our course of action one way or the other is pointless, however impressive it may be to one who does not understand orthodontic objectives.

Milo Hellman's¹ view was that the parents made the diagnosis when they recognized a need for orthodontic treatment. To him, everything the orthodontist did thereafter was case analysis and treatment planning. This point

¹From the University of California School of Dentistry.

Presented at the annual meeting of the American Association of Orthodontists, Detroit, Michigan, May 4, 1959.

of view is perhaps too sweeping, since parents do sometimes confront us with conditions which we recognize as transient; our decision not to treat differentiates between true malocclusion and that which is merely unattractive. This constitutes a sort of differential diagnosis.

In a specialty which has never felt the lack of arguable issues, a number of controversies center in the area designated as "diagnosis." We can run the gamut from Hellman's virtual rejection of the term all the way to disputes as to what properly belongs in orthodontic diagnosis and as to how rigid the standards should be. Frequently one disputant will profess to be completely mystified by the terms employed by the other side. Words and phrases which lend themselves to this kind of gamesmanship are "basal bone," "bimaxillary protrusion," "normal," and "good face."

Some orthodontists apparently attach a great deal of importance to terminology, as if we could not possibly understand one another without getting the definitions in apple-pie order beforehand. Certainly, it is possible to gain time in an argument by imperiously demanding, "Define your terms, sir!" But such a request, when the definition in use seems to rely on a weak premise, is not to be dismissed as hair-splitting. The terms which we employ in everyday discourse reveal what we accept as fact. Thus, an orthodontist talking about diagnosis or case analysis often reveals his views not only on etiology but on the limitations of treatment as well.

Our program chairman not only lists certain topics for discussion, but also wants some judgments on prevalent orthodontic beliefs; he suggests the labels "proven facts," "circumstantial evidence," and "personal opinions." Before making even a tentative start on such an imposing assignment, one may well ask, "What ground rules are to prevail?" Are we to accept a point of view simply because no controverting body of evidence exists to discredit it? Will we embrace a theory just because a plausible case for it can be made through deductive reasoning? Will a series of cases selected to illustrate a concept be accepted as proof of the concept?

Such rhetorical questions put so bluntly invite the reaction that surely we are more skeptical than that. There is reason to believe that we are now, at least with respect to ideas advanced in recent years. Under the general heading of "diagnosis," however, some of us continue to operate under assumptions prevalent thirty years ago, when orthodontists were seemingly prone to accept notions as long as there was nothing specific at hand to disprove them. An example of this attitude in operation was the heavy reliance which we put on environmental factors in explaining all but the most grotesque of malocclusions. Orthodontists were not pikers in those days; one article¹¹ which had marked influence upon orthodontic thought for other reasons, and hence will be cited specifically later, ventured the opinion that "the genetic determinators may have been altered by postnatal influence such as infectious disease." While the literature was replete with articles which attributed malocclusion to postnatal events, really convincing evidence was available only where tongue, fingers, and thumbs were involved, and sometimes then it was pretty tenuous.

In the early 1940's the elaborate house of cards collapsed, and I would attribute this primarily to the impact of one careful piece of research. Brodie's² demonstration of how facial pattern maintained its proportionality made previously unchallenged assumptions no longer tenable. Indeed, it may be said that the profession reacted so strongly to this contribution that the effects of local factors were de-emphasized too much. Thus, we see an entire specialty group complacently accepting a set of ideas on a sort of "why not?" basis, only to do an about-face when confronted with some tough facts.

While orthodontists cannot rely exclusively upon science in its purest aspect for guidance, it nevertheless does no harm to examine the guide lines of scientific disciplines, however exacting they may be, for there are many problems and hypotheses in our field which are amenable to the scientific method. When that is so, I doubt that we should settle for anything less. Some of the guide lines of the truly scientific disciplines are these: the burden of proof is upon the advocate of a point of view, not upon those who remain unconvinced; deductive reasoning is indispensable to the design of a scientific inquiry but is not a substitute for it; the mere display of instances conforming to a point of view does nothing to make it the correct one.

Another example may be cited as to why this is not too academic an outlook. Conceding again that orthodontics is based on more than science, we accept as true certain clinical observations which are not proved in the scientific sense; experience suggests that they are true. But what of those who have not had the experience? Here there comes to mind the dilemma over thumb-sucking. As orthodontists we see no need for formal compilation of evidence on the point, for in its broad aspects at least, the role of thumb-sucking is self-evident to us. It is not nearly so self-evident to pediatricians, or so the lay press makes it seem. Their experience either convinces them that we have been misled by ours or leaves them in a quandary. The total capitulation on the part of pediatricians and psychiatrists to our point of view is too much to hope for. A group which can get so much mileage out of toilet-training is not going to have its fine dreams devastated by either evidence or logic.

But even if we could win a few minor skirmishes, we would be better off than we are now. Only the overwhelming weight of objective data can do the job. Some attempts at this have been made, but they have not had the necessary impact, due either to evident flaws in design of the study or to failure on the part of orthodontists to use them forensically as substitutes for their own asseverations of fact. Our record is somewhat better with respect to the role of sugar in dental caries, but unfortunately the really reliable evidence which we have to support our case is obscured by the large quantity of irresponsible nonsense uttered on the subject in some dental circles.

But let us get down to business. Going down the long list of factors alleged to relate to malocclusion, affixing labels of reliability such as "proven facts," "circumstantial evidence," and "personal opinions," requires more temerity than even I possess.

We shall have to consider some ideas which have echoed in hotel ballrooms for so many years that no one thinks to question them, some pronouncements of

"experts" which are derided privately (but never publicly) by other "experts," and some imponderables which virtually defy objective testing.

In fulfilling my role as court-appointed crank, in fairness I should begin with one of my pet notions—the concept that inheritance is the most important single factor in the determination of facial pattern, providing thereby the basis for malocclusion.

In the last two decades orthodontics has moved from an almost total preoccupation with things environmental to a fatalistic acceptance of inheritance. This has not come about by the accumulation of evidence demonstrating heredity's role in a positive way. Instead, the cherished notions of the past which attributed so much to environment have, under critical examination, been found to apply merely to teeth and to the alveolar process.

Positive demonstrations that genetic principles are at work in the dento-facial complex have, of course, been made. There was a time when even this was not accepted, but now we know something about the inheritance of tooth morphology and the congenital absence of certain teeth. To both our amazement and our amusement, we have inspected the progeny of Stockard's³ dogs. In them we have found conditions which seem to resemble human malocclusion. We consider unlikely a mismatch between man and wife comparable to a cross between Pekinese and Great Dane, but at least we get the idea. So far as dentofacial dysplasias are concerned, however, we can say with the layman that children "take after" their parents, but not much more.

Only recently Kraus and associates⁴ have published an excellent study of the physiognomy of triplets. They have shown us that whereas all these years orthodontists have studied facial pattern as the relationship of a set of points in space, when one is interested in inheritance it is more profitable to concentrate on the points themselves. To use Kraus' own words: "This led us to postulate that bones and segments of bones of the craniofacial complex are, in their morphologic configurations, subject predominantly to the influence of heredity. It seems apparent, however, that in their various inter- and intra-relationships which together make up a harmonious (or unharmonious) head and face, the environment is in the driver's seat." Only time can tell the extent to which Dr. Kraus will savor the delight of being quoted out of context.

More than any other factor in our time, Brodie's report on facial pattern, previously mentioned, revealed the inadequacies of etiological theories which relied solely on environment. It did not, however, as some people think, positively establish the role of inheritance. Instead, his findings might have been the same if facial pattern were determined by intrauterine pressures.

Considering the fact that we have turned to inheritance because environment defaulted, it is not surprising that some of us misunderstand its role in orthodontic diagnosis. Witness some of the admonitions under this heading.

It is suggested by some that we should interview both parents because heredity is so important. The idea in itself is not bad—the father as well as the mother should hear about responsibilities and the fiscal facts of life. You

may well learn something by appraising their stature and their profiles, but if you think a cursory inspection of the parents constitutes a genetic survey, you have grossly oversimplified the problem.

We are also told not to tamper with "the natural pattern of the individual." Implicit in that advice is the assumption that to modify it as genetically determined is either morally wrong or foredoomed to failure.

This attitude concerning the inexorable influence of heredity comes from confusing the history of the race with the history of the individual. Many years ago to test the ability of the germ plasm to reassert itself biologists cut off the tails of mice in generation after generation. Of course, the job had to be done again with each litter as long as the experimenters persisted in their efforts. I have often wondered why the study had to be performed at all, for it seems to me that the record was clear a long time before. For 2,000 years the Jewish people have circumcised their male children; yet today every male child of the Jewish faith has to be circumcised. Nature indeed has her way, but please note that she is patient enough to wait another generation before achieving it.

Still another realm for critical evaluation is the alleged relationship between ill health and malocclusion. Twenty years ago our journals frequently carried articles purporting to show the etiological tie-up between illness and orthodontic problems. These have now fallen from fashion. Can this be because there is nothing new to be said on the subject? Or is it because of loss of confidence in the general idea? Certainly the textbooks are conspicuously more guarded in their statements nowadays. Yet the books which fail to spell out just how sickness and malocclusion are specifically related advise in another chapter the taking of a fairly pretentious medical history. Plainly, the idea dies hard. Each orthodontist knows the extent to which he delves into the previous health record by means of printed office forms. I have only this suggestion: When the time comes to reorder from the printer, go over the form and ask yourself to what extent each item influences what you do for the patient. If you have one plan of treatment for normal deliveries and another for breach presentations, by all means record the type of birth. If the age at onset of measles governs your treatment approach, do not alter that portion of the card.

Where attempts have been made to link malocclusion and illness specifically, they have almost without exception been nothing more than examples of the two conditions existing together. The contention is without merit until it can be demonstrated in a large group, randomly selected, that healthy children have relatively little malocclusion and sickly ones a good deal. The real skeptic would go a step farther to insist that demonstrating the association is not enough; blue eyes and blond hair are often found together, but it cannot be said that one causes the other.

The belief that malocclusion is a consequence of sickness is, I suppose, born of the easy presumption that poor health stunts growth. Since this has never been specifically tested in the area of dentofacial growth, we must

turn to studies of general bodily growth for serious consideration of the proposition. When we do, we learn that both Hardy⁵ and Stuart⁶ found in two independent studies that statural growth was seemingly not affected by frequent or prolonged illness.

The assessment of physiologic age by means of wrist films is an imposing procedure, alleged to have impact in orthodontic diagnosis. It bears a remarkable similarity to the horse trader's practice of inspecting an animal's teeth to determine its age. Of course, the latter does not have the same elegant connotation as the former. In spite of the similarity, there are two important differences: the horse is not exposed to ionizing radiation, and the horse trader knows why he is doing it.

With a good set of intraoral roentgenograms, the orthodontist already has a reliable device for comparing physical maturation with chronological age. We have no reason at present to believe that children who are advanced or retarded in bone age respond any differently to orthodontic treatment than do those who are on schedule; we have no way of predicting facial growth spurts from wrist films. From time to time a practitioner will demonstrate selected cases by which he imputes to wrist films diagnostic insight which he otherwise would not possess. Selected cases prove very effectively that the one showing them has made up his mind on the matter, but they prove nothing else.

The presumption that wrist films furnish valuable information to the orthodontist demands that one ignore the fundamental difference between growth and development. We hear these two terms together so often that we sometimes forget the important distinction between the two. Growth is increase in size; development is progress toward maturity. Increases in height and weight are examples of growth; learning to walk and to talk and the appearance of new ossification centers in the wrist films are examples of development. Orthodontic treatment is carried on the tide of growth; the swing of the mandible in the circumpubertal years is due to growth at the condyle head. Growth and development go together, but one cannot be definitively predicted from the other, and most certainly one cannot be equated with the other. We would not be likely to say, "Now that baby has learned to talk, we must buy him new shoes." Yet from time to time I hear advocates of wrist films in orthodontic diagnosis make generalizations which are equally irrelevant.

On somewhat more substantial ground are the assertions that malocclusion is related to the function of the endocrine glands. At least it can be said that some experimental evidence is available from animal studies demonstrating that the development of teeth and their eruption are influenced by endocrine secretions. Here again there is a notable lack of clinical material to tell us how frequently such problems complicate our daily affairs. It should be remembered that the typical and proper approach of the bench researcher is the total extirpation of a gland, producing thereby the complete absence of the hormone under scrutiny. You may admire such a research accomplishment without being obligated to relate it to your daily work. Let us consider

a case in point. It has been separately demonstrated by Schour⁷ and by Baume⁸ that extirpation of the thyroid, without removal of the pituitary, leads to a remarkable accordion-pleating of the roots of rodent incisors, which normally show a continuous growth and eruption. Seemingly, anterior pituitary growth hormone produces growth of the root end, but without thyroid hormone no eruption occurs.

This twice-tested laboratory observation, plus some curbstone impressions, has led to the view that tardy tooth eruption can be blamed on a lazy thyroid gland.

Several years ago some medical colleagues and I sought to test this idea, using a group of youngsters who were, at the very least, a year and a half behind the dental age of schedule as judged by the tables of Schour and Massler.⁹ We used every available test of thyroid metabolism, including protein-bound iodine and radioactive iodine, and, in deference to popular usage, we even ran basic metabolic rates in spite of the poor reliability of that technique. The tests were exhaustive enough to require an entire day for each subject. When not one of the first twelve subjects showed any plausible evidence of hypothyroidism, we terminated the pilot study, convinced that we were not pursuing a very hot lead. These modest negative findings have never been published, but more than once they have come up in casual conversation.¹⁰ All too frequently I am chided for mentioning them, when only twelve children were examined. It is apparent from this that, in some circles at least, the burden of proof is not upon one who advocates a particular theory but upon the one who questions it.

Relating the pituitary gland to orthodontics is a moot point in orthodontic diagnosis, one which fortunately does not arise often. For a long time I concealed as best I could an annoyance with orthodontists who would, on no better evidence than an aggressive chin, suggest to the patient that an endocrinopathy existed. I had been taught that both gigantism and acromegaly were due to excessive amounts of anterior pituitary growth hormone which would affect any growth site still capable of responding to it. If the patient were young enough that epiphyseal union had not occurred, gigantism would result. In the older patient, the more grotesque condition of acromegaly would come about, as only certain local areas, such as the condyle of the mandible, could respond. A resemblance between a middle-aged acromegalic and an 8-year-old child with Class III malocclusion may sometimes be found. But does that constitute a diagnosis?

The work of C. C. Howard¹¹ has seemingly been influential. He said unmistakably: "...An imbalance of the growth hormone of the anterior lobe of the pituitary body is the fundamental cause [emphasis C.C.H.] of the overgrowth of the mandible."

His paper included a table based on fifty-nine cases diagnosed as "hyperpituitary, anterior lobe." Only fourteen of the fifty-nine cases of hyperpituitarism present the kind of occlusion one would expect from his theory, and two of the fifty-nine were actually Class II cases! Undaunted by this, he said, "It will be noted from Table I that 57 of the 59 cases present *no evidence*

of retarded jaw and arch growth" [emphasis C.C.H.]. We cannot, from the distance of twenty-three years, evaluate how these diagnoses were reached and we cannot guess accurately at what reservations we should have about them. For instance, if the physician based his diagnosis of hyperpituitarism in part upon the facial appearance of the patient, the validity of Dr. Howard's table would have to be questioned. If his table can be accepted at face value, we must concede that a substantial number of Class III cases are included in it. Certainly, in a random sample of the population one would not expect to find 25 per cent exhibiting mandibular prognathism. My present clinical hunch is that the inherent facial pattern of the individual or, more specifically, the growth direction of the head of the condyle is the clue to the riddle. My purpose here is not to deny any relationship between hyperpituitarism and Class III malocclusion but, rather, to say with firm insistence that we should not be diagnosing hyperpituitarism from Class III malocclusion and that certainly there are other bases for Class III malocclusion.

You will readily understand that, in spite of my skepticism, whenever the suspicion of hyperpituitarism is raised I refer to an endocrinologist for the final word. So far he and I have yet to flush a genuine case of hyperpituitarism from an initial concern for occlusion or profile. However, it is perhaps worth reporting how one steadily worsening Class III malocclusion was stopped in its tracks, even though competent medical opinion held that pituitary function was normal. The same endocrinologist who gave the young college student a clean bill of health suggested irradiation of the gland, just as if his findings had been otherwise. Actually, there is good precedent for this in the arrest of statural growth where hyperpituitarism can be ruled out. Cephalometric tracings before therapy showed the mandible increasing in size while other parts of the face did not grow; films taken after irradiation of the pituitary showed that the tendency had been arrested. Here we have a strange contradiction; in the absence of other symptoms, we cannot arrive at a verdict of hyperpituitarism just because the mandible displeases us. Yet, in certain selected cases, the same treatment which we would employ for true hyperpituitarism is indicated.

The effect of other endocrine secretions on normal metabolism could be mentioned, but there seems to be little point in it when no specific orthodontic implications are involved. We can consider, however, one other factor of alleged importance. Of course, none of us present today has observed root resorption in his patients, but I am told that it is a problem for some of the absent brethren. How much of this can we hang on hypothyroidism?

The presumption that the predisposing factor of root resorption is underfunction of the thyroid gland stems from an article by Becks¹² published in 1936. This article showed unmistakably that orthodontic treatment was not the sole cause of root resorption, since Becks had fifty cases of root resorption in patients who had never had orthodontic treatment. We can derive a measure of comfort from this observation, but it should be noted that where his fifty orthodontic cases span only the age range from 11 to 35, the nonorthodontic cases of root resorption included the span from 11 to 60.

Thus, no matter what it is that causes root resorption, one group had nearly twice as many years in which to encounter it. When Becks read his paper in New York, two Manhattan medical specialists invited to comment expressed polite doubts concerning the diagnosis, murmuring about the difficulties of diagnosing hypothyroidism. My chief objection, however, is that the sample consists entirely of root resorption cases. We have no means of telling how many cases of endocrine disturbances Dr. Becks' medical examiners might have found in a population showing no root resorption whatever. Since they were able to come up with but six negative physicals in a group of 100 persons, we may presume that they were not insurance examiners! A parallel study is badly needed wherein a group of persons, independently diagnosed as hypothyroid, would then be examined for the presence or absence of root resorption. In the twenty-three years which have elapsed since the original paper, no additional studies linking hypothyroidism with root resorption have been provided, and no one has even hazarded a guess as to what the physiologic mechanism might be whereby a low blood level of thyroxin would cause the resorptive process to turn away from alveolar bone and affect the root surfaces. It is less than sporting to be overly critical of this pioneering effort to explore the systemic aspects of a vexing problem, and my present harangue is not addressed to the original investigator. Rather, the mild censure should be reserved for the substantial number who regard the issue as settled.

Not all of the items of orthodontic diagnosis which call for a probing scrutiny have to do with general health or reflect a desire to steal a leaf from the physician's notebook. Some cherished but unproved notions concern the teeth and their supporting structures. Let us consider first the proposition that, by making certain measurements upon the models, we determine whether or not there exists a disparity between tooth material and "basal bone." There are several ways by which we may, with dividers and millimeter rule, ascertain the size of teeth in a jumbled arch and decide whether or not they may all be saved. Once again, we can find, in the very terminology employed, clues as to what orthodontists believe. Certainly, it is presumed that crowding comes from a lack of harmony between mesiodistal tooth dimensions on the one hand and osseous structures on the other. What else can we conclude from such terms as "discrepancy cases" and "insufficient basal bone"?

Two apparent defects of reasoning have made these systems of diagnosis easy prey for those who would deride them.

First of all, it is next to impossible to measure bony dimensions from even the best of plaster models. Teeth, yes—with great accuracy. But no one can arrive at a reliable ratio without measuring both components accurately. As a matter of fact, only the procedure of Howes pretends to measure anything but tooth size and the distance between teeth. Yet most of these systems are called by their proponents systems for discovering discrepancies between tooth and bone.

Second, one oversimplifies the problem when he presumes that crowding can be analyzed completely when he knows the size of teeth on one hand and the size of the bones on the other. By the coordinated use of both frontal

and lateral headfilms, one can go part of the way toward measuring the size of the supporting bone, although anyone who attempts it will recognize the inadequacy of the technique. Watkins¹³ made such a study in our laboratory, only to find pitifully low correlation between crowding and bony dimension. Also to be considered are the placement of the dental arch anteroposteriorly upon the bony base and the inclinations of the teeth themselves. This limits our consideration of the problem to only two entities—bone and teeth. It says nothing of the draping of soft tissues over these structures, and it ignores the dynamic action of muscles.

Does this mean that the popular techniques of measuring models should be discarded? The answer to this is certainly "No." We cannot ignore the abundant empirical evidence that such procedures work. They work not because tooth size is being accurately related to supporting base but because a malocclusion represents a state of equilibrium. The multiplicity of factors at work upon an irregular arch will, for the most part, be at work when the orthodontist withdraws from the scene. Through trial and error, we have discovered the dimensions which we should accept as limiting factors. These will be conditioned by our own view of orthodontic objectives, as we discover when we apply several different techniques of measurement to the same series of cases. We quickly see that the validity of one man's method depends in part upon what he considers a valid goal of treatment. We see also that what we so casually label "the measurement of tooth-bone discrepancy" is really the quantitative assessment of the interrelationships of the following factors: the sum of mesiodistal tooth width, arch form, anteroposterior placement of denture on base, intercanine width, axial inclination, soft tissue bulk, muscle activity, clinical hunch, and—oh, yes, I almost forgot—the size of the supporting base.

Because the program chairman says I must, I turn now to a subject which ought to be left in peace. Those who believe in it do no harm, and indeed the student who learns it as Gospel truth probably gains an insight which he could get in no other way. I refer to the subject of mesial drift.

It is a safe observation, supported by histologic findings, that teeth move, with the passage of time, toward the median line. The question is: How much do they move? If you are not averse to teleologic explanation, you can answer by saying that they move enough to take up natural wear at contact points. In certain adult mouths axial inclinations and contact point relations suggest that the amount has been substantial. But how much, really, can we rely on this phenomenon to explain malocclusion in the first two decades of life? We must concede of course, that when the arch is broken through the loss of tooth structure, tipping and drift will occur if spaces are present. Instead of belaboring the obvious, let us consider the more subtle but no less insidious threat—mesial drift where no teeth have been lost.

Mesial drift has been invoked as an explanation of crowding in both dental arches. As an etiological theory, it was very serviceable twenty years ago to those who sought by every means possible to deny extraction a role in orthodontic therapy.

Thus, we have been advised to note the position of the crown of canines, maxillary or mandibular, in relation to the apex; if the crown is ahead of the apex, one is supposed to presume that mesial drift had occurred. Another clue was the maxillary first permanent molar; if there was rotation of the mesial half toward the lingual, one was to presume that the crown had moved forward, rotating about the long lingual root. We shall have to concede, I think, that if the buccal teeth did move forward through alveolar process in substantial amount, the long cuspid root and the large lingual root of the first molar would behave as described. But no one has to concede that where we find a rotated molar or a mesially inclined cuspid mesial drift has, in fact, occurred. Anyone who has watched the eruption of a cuspid over a period of months can testify that cuspids may assume such an inclination without drifting into it.

We cannot dismiss altogether the possibility that mesial drift complicates our problems to a degree. For example, when molars erupt into the common end-on relationship, two things can occur: (1) The favorable event is a spurt of mandibular growth which converts tooth relationship into Class I and improves the profile at the same time. This is all to the good, and mesial drift probably plays no part in the phenomenon. (2) If no mandibular swing occurs, however, and if the occlusion is not to remain end-on, settling must account for the change. Under such circumstances, the first molar can readily move forward enough to produce a discernible rotation.

If teeth erupted all at once, like tulips in the spring, a case for mesial drift would be more convincing. But let us remember that a convincing case is not enough. We should be content with nothing less than a serial study of growing children, in which would be demonstrated the steady march of molars and premolars toward the midline. As the matter stands, we have a plausible explanation of the phenomenon, without being sure that the phenomenon exists.

Turning to the notes of the program chairman for the last time, we may take up the proposition, "What is a good face, and is a particular sort of face any better than others?" Throughout the course of these remarks, I have plaintively called for some evidence, offered in lieu of slippery logic, weak analogies and recondite irrelevance. Curiously enough, in the one area where scientific proof is impossible—the area of taste and personal preference—we find some valiant efforts to arrive at objective decisions. In the search for a prototype of human facial beauty, orthodontists have turned from the opinions of other orthodontists to those of professional artists and connoisseurs of art. Even the public, who presumably know nothing about art but know what they like, have had their innings. The design of some of these studies has been ingenious and commendable, often surpassing that of projects of less subjective import. They make fascinating reading but they settle nothing, for Santayana's remark still holds true: all preferences are irrational.

This essay has been necessarily critical, based as it was on specific questions posed by a colleague. Had I been asked to comment upon the hospitality of Detroit orthodontists, the pulchritude of their wives, or the San Francisco

climate, these remarks would have been more felicitous. Any misgivings that I may have over being excessively critical have to do with comments concerning pioneering studies of many years ago. If C. C. Howard were with us today, I would expect good-natured chuckles rather than righteous indignation, for he was a free-wheeling critic in his own right. But the critical finger is not poked at such early efforts to broaden our understanding. It is all too easy to second-guess these conscientious ventures, suggesting how hindsight might have strengthened them. Insofar as blame is to be assigned, it should perhaps be directed to an uncritical acceptance of concepts which need further exploration.

Our best diagnostic procedures have grown out of our immediate needs and involve models, intraoral films, oriented photographs, and cephalometric films. We may not agree on their uses, but we generally know what the other fellow is driving at, whether we like it or not. Our poorest diagnostic theories, it seems to me, derive from the assumption that malocclusion is a sickness rather than a morphologic problem. We are not the pediatricians of the dental profession; we are, rather, more comparable with orthopedists. When one fails to distinguish between metabolism and morphology, some misconceptions arise. The rigid standards which are applicable to chemical processes—body temperature, blood sugar level, and the like—have no analogues where conformation is concerned. Thus, we cannot say that there is but one axial inclination for a tooth or one sort of profile for a face. We should not even envy the internist because he may sometimes employ such rigid standards. Our problem is simply different from his—no better and no worse. We cannot be indifferent to the physical fitness of children, but we should be cautious in accepting specious applications to our immediate problems.

It would almost seem that a relatively young profession, striving to be more than just mechanical, has made some commendable efforts to explore the biologic and medical aspects of its obligations to society. In the process, it has embraced with unseemly haste a few things which need further testing. Thus, when medical colleagues raise the cry "more basic research," we should, of course, add our voice to the chorus. In doing so, however, we should not forget to provide also for clinical investigation.

Efforts of this kind are, of course, being made. Study clubs and similar organizations whose interests are avowedly clinical frequently seek nevertheless to discount the display of hand-picked cases. Dr. Tweed's exhibit of 100 consecutively treated cases more than twenty years ago is a celebrated case in point. Each year the American Board of Orthodontics receives a certain number of theses which represent conscientious efforts to examine objectively and systematically some clinical puzzles confronting the orthodontist. Sometimes, it is true, these amateur investigators stumble along the way, failing to arrive at convincing conclusions. The professional researcher might well attribute the disappointing results to what he would call the "design" of the study. This means that some crucial point was overlooked or that he failed to allow for unconscious bias; it does not necessarily reflect a failure to employ statistical jargon or to use sophisticated electronic equipment.

However naïve these efforts may seem to the hypercritical, they command my ungrudging respect. The very undertaking of the job demonstrates a desire for independent learning, as opposed to the spongelike absorption of information from others.

Those of us in dental education know that it is believed in some quarters that if a dentist is interested in research, he must turn away from clinical dentistry and delve into one of the basic sciences. At a recent meeting of dental researchers the question was raised as to how, specifically, dentistry had profited from an intensive study of the biologic sciences. The silence which followed was prolonged enough to be embarrassing, and you might be interested to know how it was broken. The speaker was not an orthodontist. Nevertheless, he rose to pay tribute to the orthodontists and what they had done with a clinical rather than a laboratory tool, the cephalometer. This correct appraisal by an outsider was interesting in view of the fact that so many orthodontists persist in viewing the cephalometer as an esoteric research gadget rather than a utilitarian device which can give us clinical information obtainable by no other means.

How then are we to relate the basic sciences which must be studied by medical students, dental students, and graduate students in orthodontics? What are the important facts which they have to teach us? And how many hours should they be given in the curriculum? There can be no definitive answers to these questions, any more than it is possible to say how much money a corporation should spend in basic research.

Every man who embarks on a professional career is obliged to devote some of his time to lines of thought which promise no immediate practical application. The investment can be looked upon as intellectual venture capital. As Sognnaes¹⁴ has recently pointed out, no very clear reasons could have been provided twenty years ago as to why a dentist should study the metabolism of fluorine. Today the world looks to dentists for its information on this subject.

If, in dealing with my assignment, I have cast a jaundiced eye on some of the biological and medical aspects, it has not been for the purpose of rejecting them. Instead, I have sought to indicate that there is nothing to be gained by premature claims of practical applications to diagnostic problems. Through painstaking work, our medical colleagues have made a clinical tool of the wrist film. That time clock of development may some day serve us equally well. Up to now, however, the clinical work has not been done and we gain nothing by pretending that it has.

Our tangible rewards from the basic sciences have come when we approached them with our specific problems. The debt that we owe is not so much the facts they have to give us as the methods they have to lend. Once we have overcome our awe of their electron microscopes, strain gauges, and devices for the amplification of tiny electrical signals, we see that the strength of the sciences lies not in the equipment at their command. Rather, it is in their insistence upon evidence, their realization that knowledge flows from the particular to the general, and their objective skepticism.

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ORTHODONTICS IN 1969

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RAW statistics can prove many things. Flagrant misuse of pseudoscientific mumbo jumbo in the past has caused many of us to cast a jaundiced eye at seemingly authoritative reports that lean heavily on this "numbers racket." Figures can be found to substantiate almost any thesis, and the sheer weight of numbers does not "make it so." It behooves us to investigate carefully the source of the substantiative statistics, to make sure that all figures have been given and that the interpretation is, indeed, impartial and objective.

This report, based on a questionnaire sent to 2,300 orthodontists, is subject to the same limitations as any opinion poll. Circumstances change, opinions change, and what we think is right today may be as wrong as sin tomorrow. Polls have a habit of distinguishing between black and white, but the infinite shadings in between are almost impossible to record. Many questions that profoundly affect the future were asked in the questionnaire, and they simply cannot be answered "yes" or "no." The answers are conditioned by too many factors—age, experience, motivation, geography, training, relative success, economic conditions, competition, timing—many things that are difficult to weigh in a welter of figures obtained from an opinion poll. Like any similar study, this report must be judged in its proper perspective. The statistics upon which it is based are as accurate as can be determined, but they *are* statistics and must be weighted by circumstances. Unlike most polls that rely on a small percentage of the total sample for their deductions, this report is based on the considered returns from well over half of the entire orthodontic profession. This is almost unheard of in a professional sampling of this type. Certainly, the profession is to be congratulated for its obvious interest in the future, and those who have worked on the compilation and preparation of the report are truly grateful to the members of the American Association of Orthodontists for the countless hours spent in answering the questionnaires. Of the 2,300 questionnaires sent out, 1,325 were answered and returned. While this can be considered an excellent response from all areas, geographic differences were noted in the percentage of questionnaires returned from each area. The highest return was

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from the West Coast. Following in order were the Southwest, Northeast, Midwest, South, and Plains States. The completeness of the questionnaire is illustrated by the fact that there were some seventy questions with 217 possible entries to collate. It took fourteen to twenty minutes to compile the results of each questionnaire, depending on the amount of additional comments. Totals were computed for six sections of the country—Northeast, Midwest, South, Plains States, Southwest, and West (Fig. 1). Percentages were also worked out for each entry as compared to the total number of answers for that particular question. This was done to make it easier to compare the different geographic areas. On a number of questions there is a significant difference of opinion. Bar graphs have been drawn, using the information from the data sheets, to illustrate the response to each question in each of the six major areas and the grand total.

It is conceivable that the 975 questionnaires that did not make the round trip might have changed some of the statistics. However, if we are to prognosticate, if we are to plan ahead, if we are to decide what is the right course, where can we turn but to ourselves? Who knows our problems, our experiences, our thoughts, and our desires better than we do? If the magnitude of the problem of orthodontic service for the future is as great as population figures would seem to indicate, then others will be clamoring for solutions. They may be less qualified to give opinions, and they may be motivated not by professional service but by political expediency. It is our duty to ourselves and to our patients to make our own decisions, based on the common good. We must think about these problems before they become so acute and complex that no solution is satisfactory. We are naïve to think that so-called socialized medicine programs in other countries are a world away and that the Punch-and-Judy status of medicine in some countries, with demagogic bureaucrats pulling the strings, need not concern us. Our strong conviction on this point is based on an "on the spot" analysis and on discussion with many men in many countries. Their experiences should motivate us more strongly to retain control of our professional status. We must be master of our destinies if we are to continue to render the best possible service to our patients.

These are facts. More than 175,000,000 people live in the United States right now. There has been a tremendous population increase since World War II, and it shows no signs of abating. Right now, there are 19½ million children under 5 years of age, and 4,000,000 babies are being born each year. Since 1950 there has been a 40 per cent increase in children between 5 and 13 years of age, raising their total to 31,000,000. The Census Bureau reliably predicts, on the basis of this trend, that the largest increase in the next ten years will be the 10- to 19-year age group—13,000,000 more children of orthodontic treatment age. This is not conjecture, for most of these children are already born. There are 60,000,000 youngsters under 18 years of age now; by 1969 there will be 75,000,000. More and more people are availing themselves of orthodontic services as they become aware of the benefits. Thus, patient education is increasing the number of patients, irrespective of population increase. Various

studies show that about one-half of all children are potential orthodontic patients. Many factors influence the ultimate number of these children reaching the orthodontist's office, not the least being economic. No matter how one looks at it, the potential is tremendous. Orthodontists in many areas of the United States will admit quite candidly that their practices cannot absorb many more patients if they are to render optimal service.

This is the background for the questionnaire that was mailed to members of our profession in November, 1958. Answers in most instances are based on personal opinion. But whose opinion on orthodontic subjects is more authoritative than that of the members of the American Association of Orthodontists?

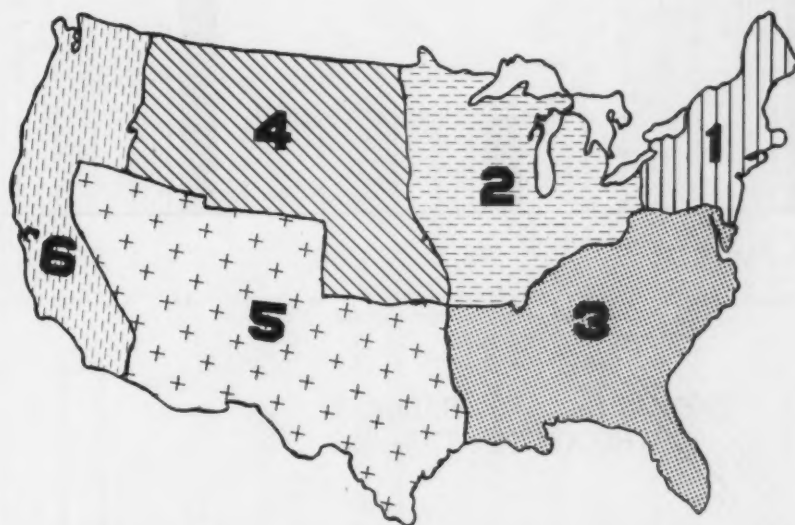


Fig. 1.—Map showing breakdown of questionnaire returns into six major geographic areas for tabulation. 1, Northeast; 2, Midwest; 3, South; 4, Plains States; 5, Southwest; 6, West (and Hawaii).

In our democratic society, we abide by the will of the majority, and for this reason alone the results will at least serve as a clue for future action by the American Association of Orthodontists. This report cannot do justice to the many thought-provoking comments and constructive suggestions on literally hundreds of questionnaires. One cannot help but feel a tremendous glow of pride in belonging to a group that has such high ideals and is so concerned about maintaining high standards. The answers show that you *are* aware of the problems, that you *are* thinking about them, and that you *do* have some of the answers!

NUMBER OF ORTHODONTISTS

The first section of the questionnaire deals with the number of orthodontists (Fig. 2). Will there be more per capita in 1969?

As a profession, we are not at all sure whether there will be more or less orthodontists per capita in 1969. (Group totals indicate that 544 believe there

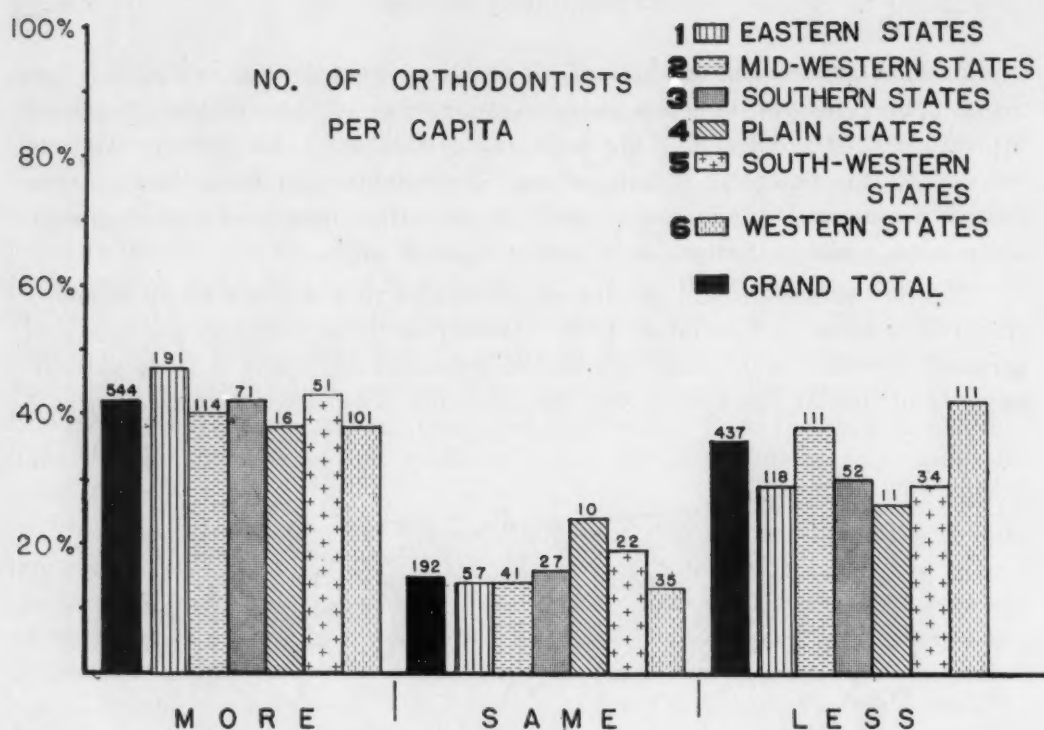


Fig. 2.—Opinion on the number of orthodontists per capita in 1969. While indecisive, there are sectional differences of opinion.

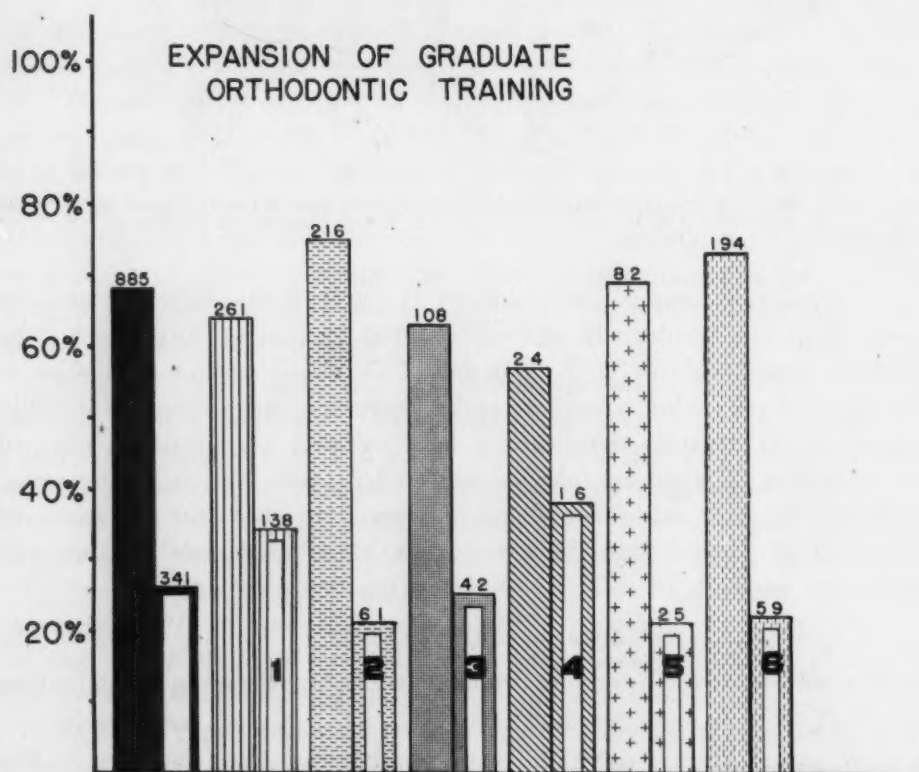


Fig. 3.—Strong endorsement of the need for expansion of university graduate orthodontic training in the next ten years. Solid bar = "yes"; open bar = "no." 1, Northeast; 2, Mid-west; 3, South; 4, Plains States; 5, Southwest; 6, West.

will be more, 437 believe there will be less, and 192 are "on the fence.") Probably reflecting the tremendous growth of the West and the inadequate training facilities there, the men in this area feel that there will be fewer orthodontists per capita in 1969. The West was the only region to indicate such a belief.

The returns heavily endorse the training of more orthodontists. The West and Middle West show the highest percentages. Almost the same majority feel that universities should give more graduate orthodontic training. The Plains States and the South show the lowest percentages, but even there approval of more orthodontic training is overwhelming. Unfortunately, despite this strong feeling, prospects are not good in this direction, with a critical shortage of teachers and facilities.

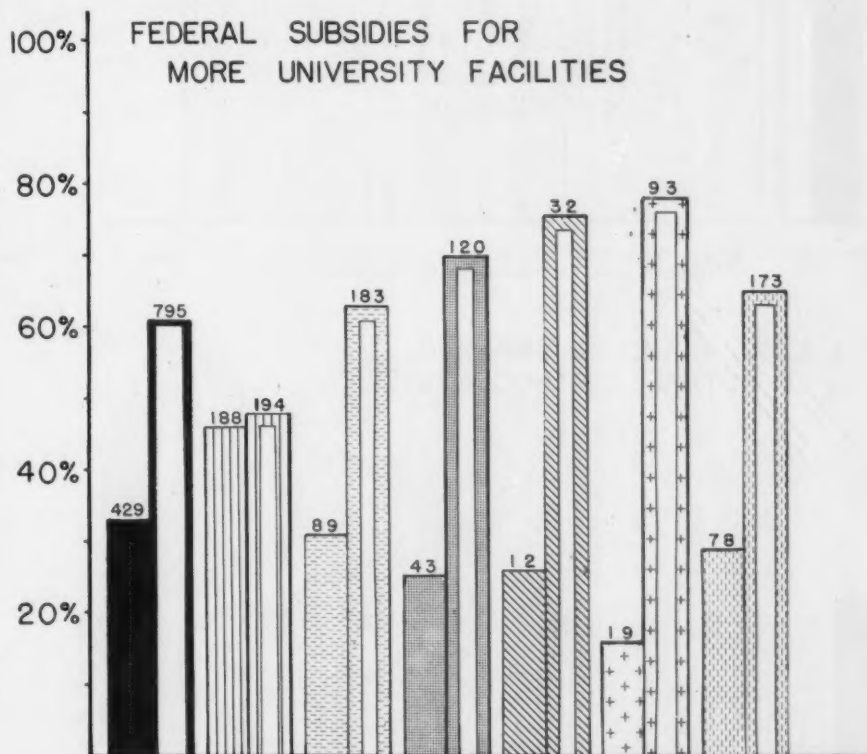


Fig. 4.—Should there be Federal subsidies for university orthodontic facilities by 1969? Only in the Northeast is this cast of opinion close. Solid bar = "yes"; open bar = "no"; black bar = total opinion.

Should the universities expand their present classes (Fig. 3)? Most feel that they should, but here, too, facilities and faculty are not available in most instances. Significantly, the answers indicate that, despite the need to train more orthodontists and despite the opinion that more universities should give training and that classes and facilities should be expanded and improved, orthodontists are strongly opposed as a group to Federal subsidies for facilities and teaching salaries. Only in the Northeast is this trend not evident (Fig. 4).

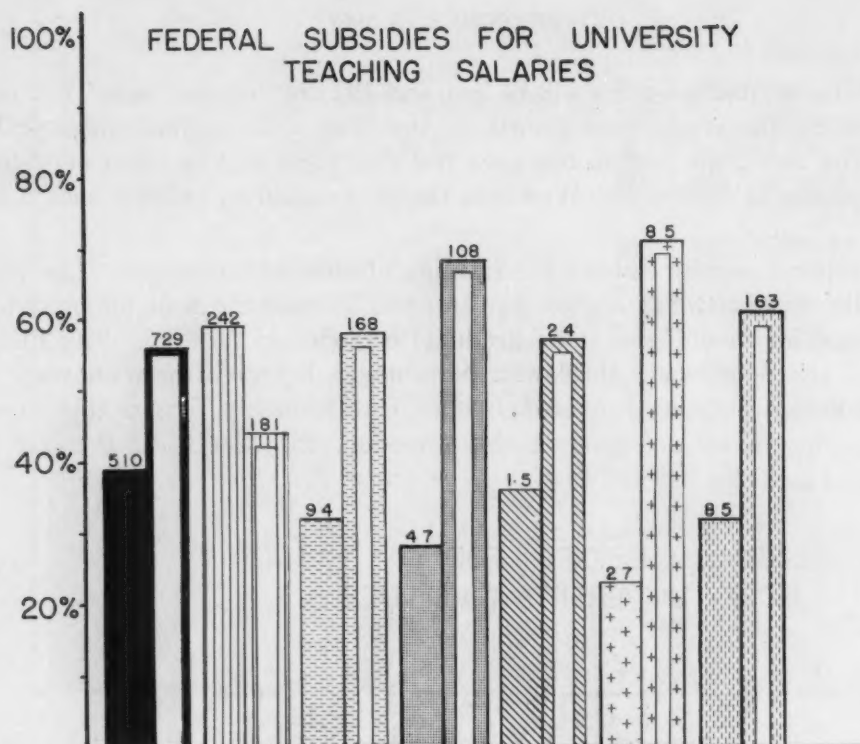


Fig. 5.—Federal subsidies for university teaching salaries by 1969? "Yes" only in Northeast. Strongest "no," percentagewise, in Southwest.

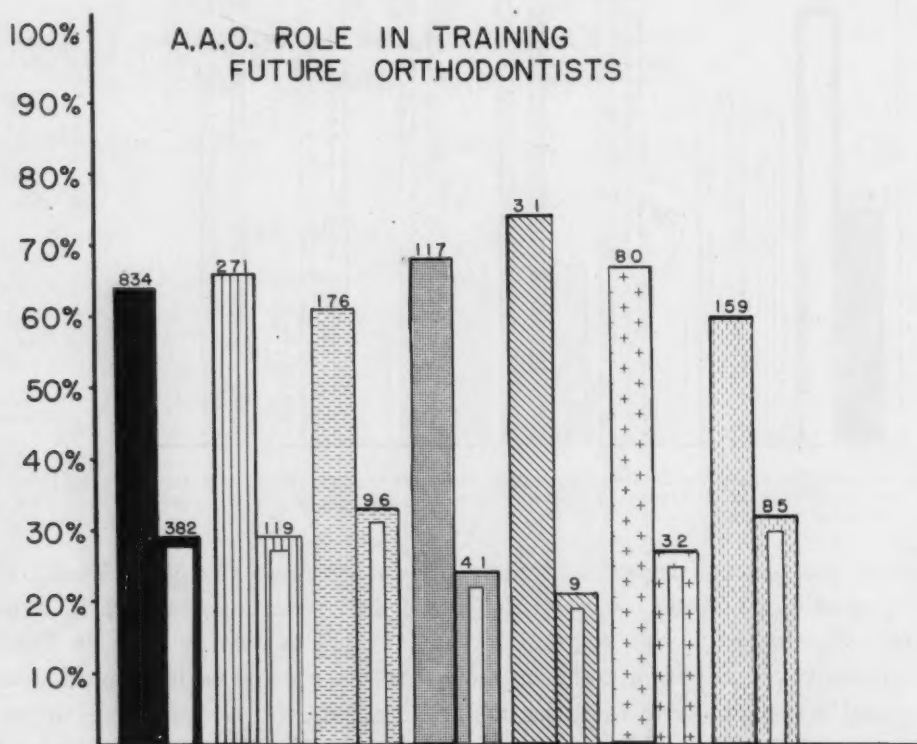


Fig. 6.—Affirmative opinion endorses a larger role by the American Association of Orthodontists in the training of future orthodontists.

Actually, the opinion is equally divided in the New England States on Federal aid for facilities, but 59.3 per cent favor aid for teaching salaries and 44.4 per cent are opposed to such aid (Fig. 5). In other areas, particularly the South and Southwest, many strong comments were made against Federal aid: "absolutely under no circumstances," "leave the professions to those trained for them," etc. Some suggest state aid but no Federal aid; others acquiesce but only as a last resort.

Should the American Association of Orthodontists take an active role in training future orthodontists (Fig. 6)? Most answers to this question are favorable, but many comments emphasize that this role should be advisory in nature.

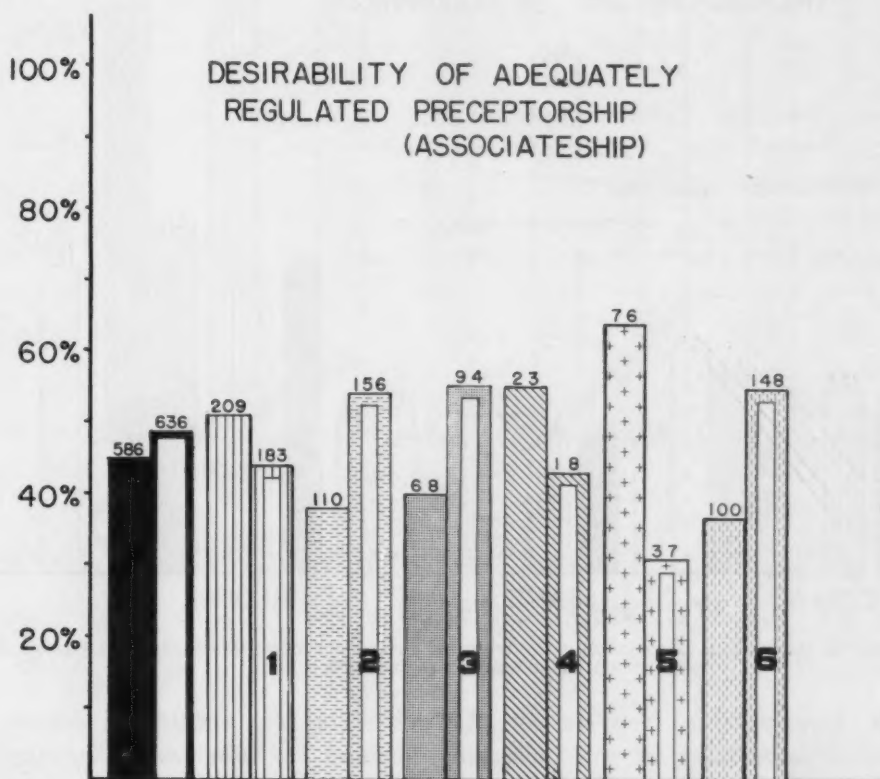


Fig. 7.—By 1969, will adequately regulated associateships be desirable? The opinion is quite close, with the Northeast and Plains States favorably disposed.

With regard to the length of graduate training, the opinion is pretty strongly in favor of university orthodontic training remaining at about eighteen months. There is some sentiment for increasing the length of the course but relatively little for shortening it.

The question was asked on the questionnaire, "Granting that the present preceptor program is adequately regulated by the AAO, is preceptorship desirable, in view of the increased orthodontic demand?" (Fig. 7.) There were many comments on this question, such as: "It is not possible to adequately regulate such a program," "you have loaded this question in support of the

vested interests of slave labor," "let us standardize the graduate training first," etc. Another reply objected to the use of the word "preceptorship" and recommended "associateship," which is quite acceptable. Certainly, no question was loaded, and only the strong feeling that exists on certain issues would make any question seem so. All questionnaires have been carefully tabulated and rechecked by Dr. Donn Chung, with the help of Dr. Tsuneo Aoba, Research Fellows at Children's Memorial Hospital. As the illustrations show, opinion varies with the section of the country; 51.2 per cent of the orthodontists from

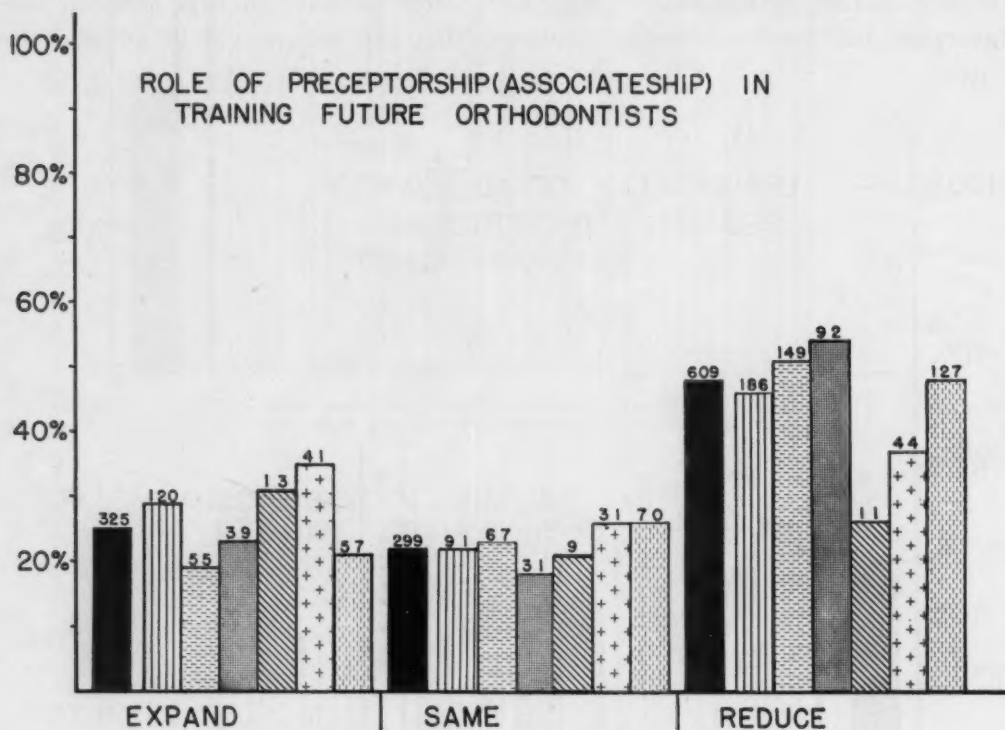


Fig. 8.—What is the role of associateship in training future orthodontists? Opinion favors a reduction of the program by 1969.

New York, Pennsylvania, New Jersey, Massachusetts, etc., considered preceptorship desirable in view of the increasing demand for services in the next ten years, whereas 44.9 per cent did not. The same view is shared by orthodontists from the Plains States and the Southwest. The opposite view prevails in the Middle West, South, and West. In the total count, 636 (48.8 per cent) opposed preceptorship or associateship and 586 (44.9 per cent) favored it.

On the question of whether preceptorship should be expanded, remain the same, or be reduced, there is overwhelming sentiment in favor of reduction in all areas except the Plains States, and this involves a total of only thirty-three returns (Fig. 8). About 2 per cent of the returns have the word "eliminate" written in. Group totals show that 24.9 per cent favor associateship expansion, 22.2 per cent wish this to remain "as is," and 47.2 per cent endorse reduction of the program.

G. V. Black's advice that the "professional man has no right to be other than a continuous student" is taken seriously by most members of the American Association of Orthodontists (Fig. 9). The answers from the Plains States indicate the least need for short courses and seminars. The Northeast, Southwest, and West show the greatest demand. The total tally of 86.4 per cent for and 8.9 per cent against more short courses is a strong hint for schools and possibly societies to provide these in the next ten years. A number of men wrote

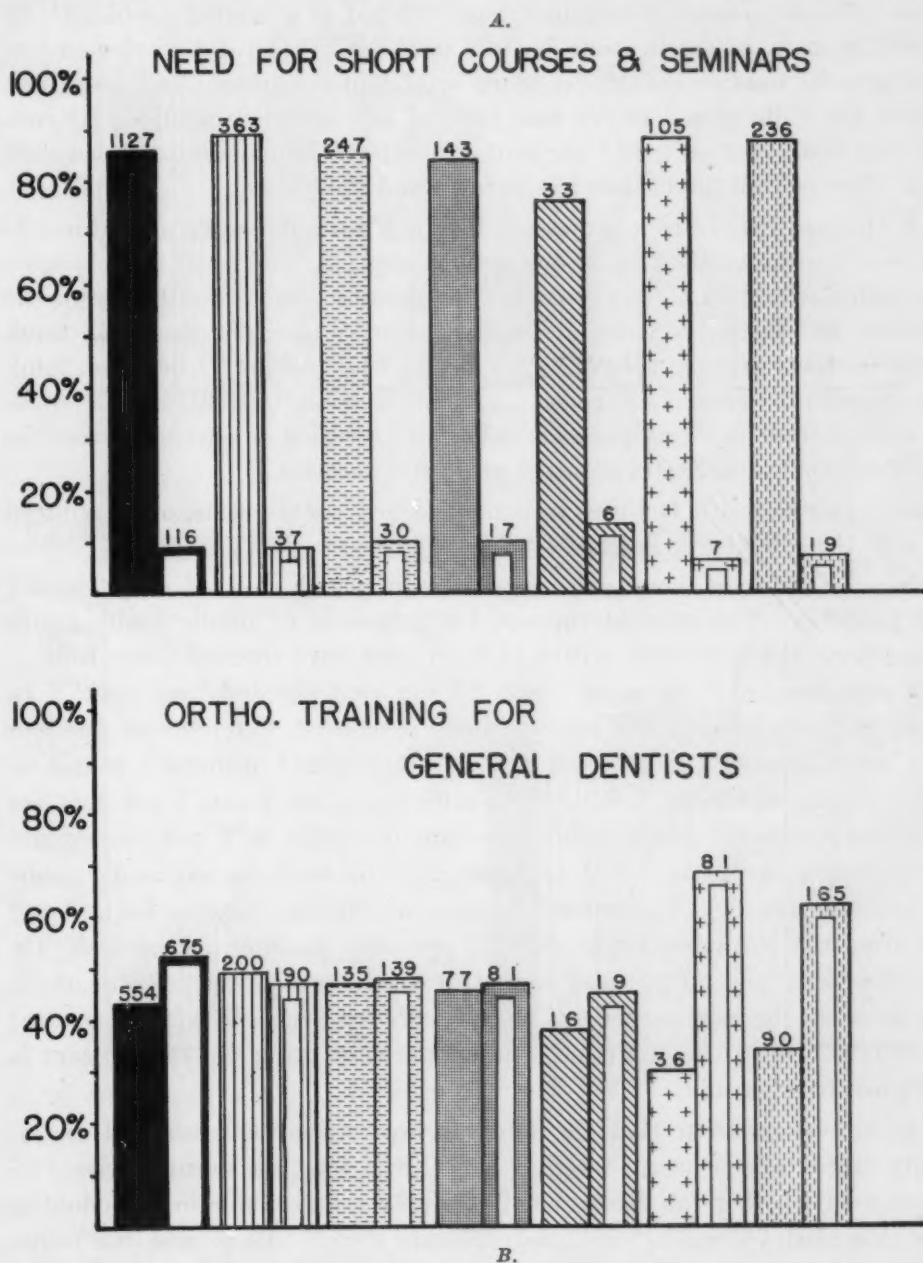


Fig. 9.—The need for short courses and seminars is clearly evident in A. Opinion on more orthodontic training for general dental practitioners is closely divided, with the Southwest and West showing the greatest negative opinion (B).

comments requesting more refresher courses. Several asked why the A.A.O. cannot sponsor seminars or short courses immediately before or after the annual meeting. One commented: "We bring an essayist thousands of miles to deliver only a forty-five-minute talk. Fuller use of such talent would cost relatively little more, and the benefits could be considerable."

Another controversy-ridden subject is the question of more orthodontic training for the general dentist to permit him to handle limited orthodontic problems. The consensus of comment was: "What is a limited problem?" or "how will he know where to stop?" Only in the Northeast did more men feel that the general dentist should get more orthodontic training, and even here the figures are quite close—49 per cent for and 46.6 per cent against. By contrast, in the Southwest only 30.3 per cent favored and 68 per cent opposed such training. The over-all total shows 554 in favor and 675 against.

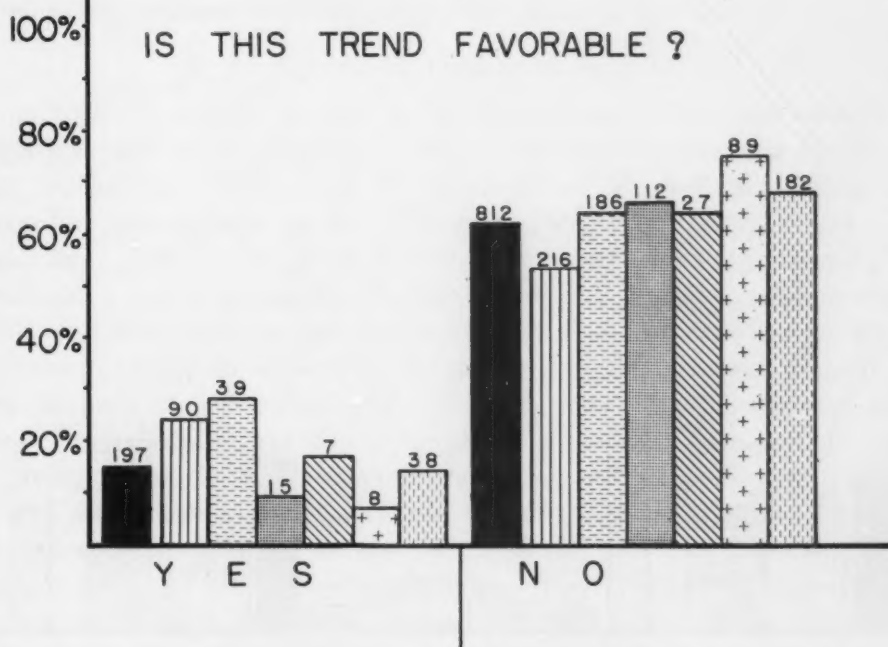
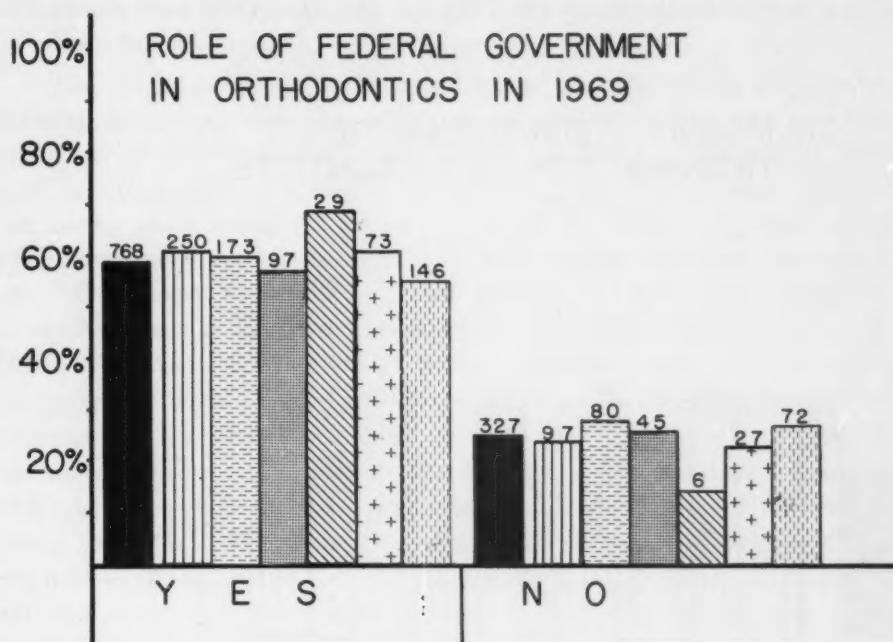
It is obvious that we as a profession feel that the pedodontist should not do any more orthodontics than he is doing right now, at least until he gets some more orthodontic training. In the tallies, 289 favored more orthodontics for the pedodontist, 478 favor his doing the same amount as he now does, 142 think he should do less, and 318 believe he should do none. Thus 72 per cent think that the pedodontist should do the same amount or less orthodontics. The highest per cent of those favoring more orthodontics for pedodontists comes from the Middle West; the Plains States show the greatest opposition.

Should public health facilities be expanded, remain the same, or be reduced to cope with the orthodontic demand?

This question drew many comments, most of which favored state but not Federal facilities. The greatest support for expansion of public health facilities comes from the Northeast, where 64.9 per cent have checked "expansion," 22.5 per cent checked "the same," and 8.1 per cent checked "reduced." In the West, by contrast, only 29.2 per cent favor expansion, 41.6 per cent feel that facilities are adequate "as is," and 21.7 per cent would approve a reduction in public health facilities. Taking the country as a whole, 44.7 per cent see the need for expanded public health facilities by 1969, 30.3 per cent would have them continue "as is," and 16.2 per cent feel we have too many public health facilities already. Federal aid to indigent children receives the greatest support from the Northeast again, with 73 per cent favoring an increase. On the opposite coast, only 30 per cent favor this step. Over-all, 51 per cent of the returns favor an increase in Federal aid, 26 per cent are satisfied with present Government efforts in this direction, and 14 per cent think the Government is too much involved already.

It is rather apparent that the Federal Government has assumed an increasingly larger role in many facets of our life in the past twenty years. To the question of whether the Government will play a larger role in orthodontics in 1969 (Fig. 10) 768 said "yes" and 327 said "no." More than two-thirds of A.A.O. members see "the handwriting on the wall," as one man wrote by way of comment. A very clear opinion is expressed on whether or not this is

A.

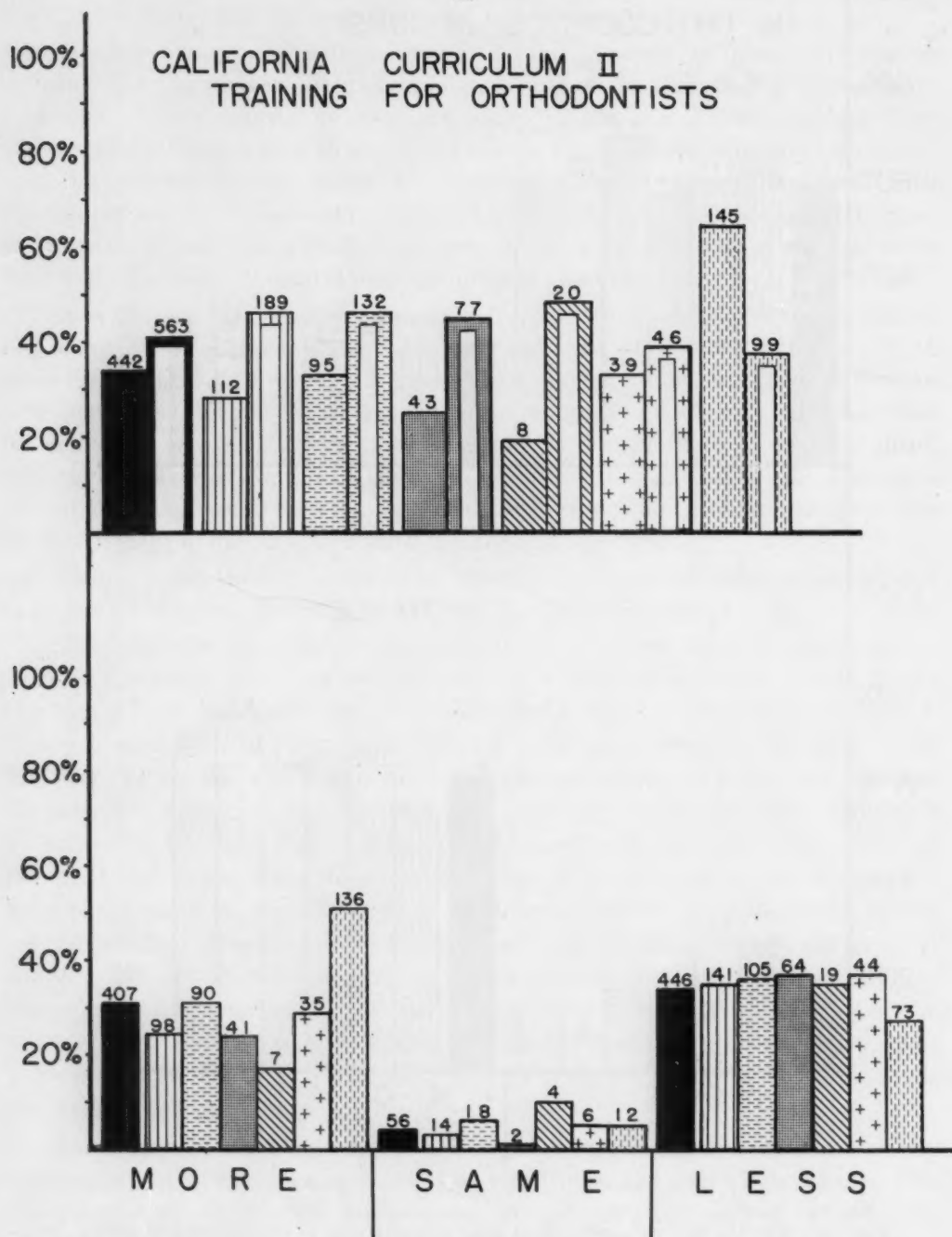


B.

Fig. 10.—Will the Federal Government play a larger role in orthodontics in 1969? Members of the A.A.O. think so (A). Is this trend favorable? Clearly not, judging from the strong preponderance of negative answers (B).

a favorable trend. Only 197 say "yes," but 812 say "no." The Northeast shows the largest percentage in favor of the increasing governmental participation (22.1 per cent). In the Southwest only 6.7 per cent of the answers were in

A.



B.

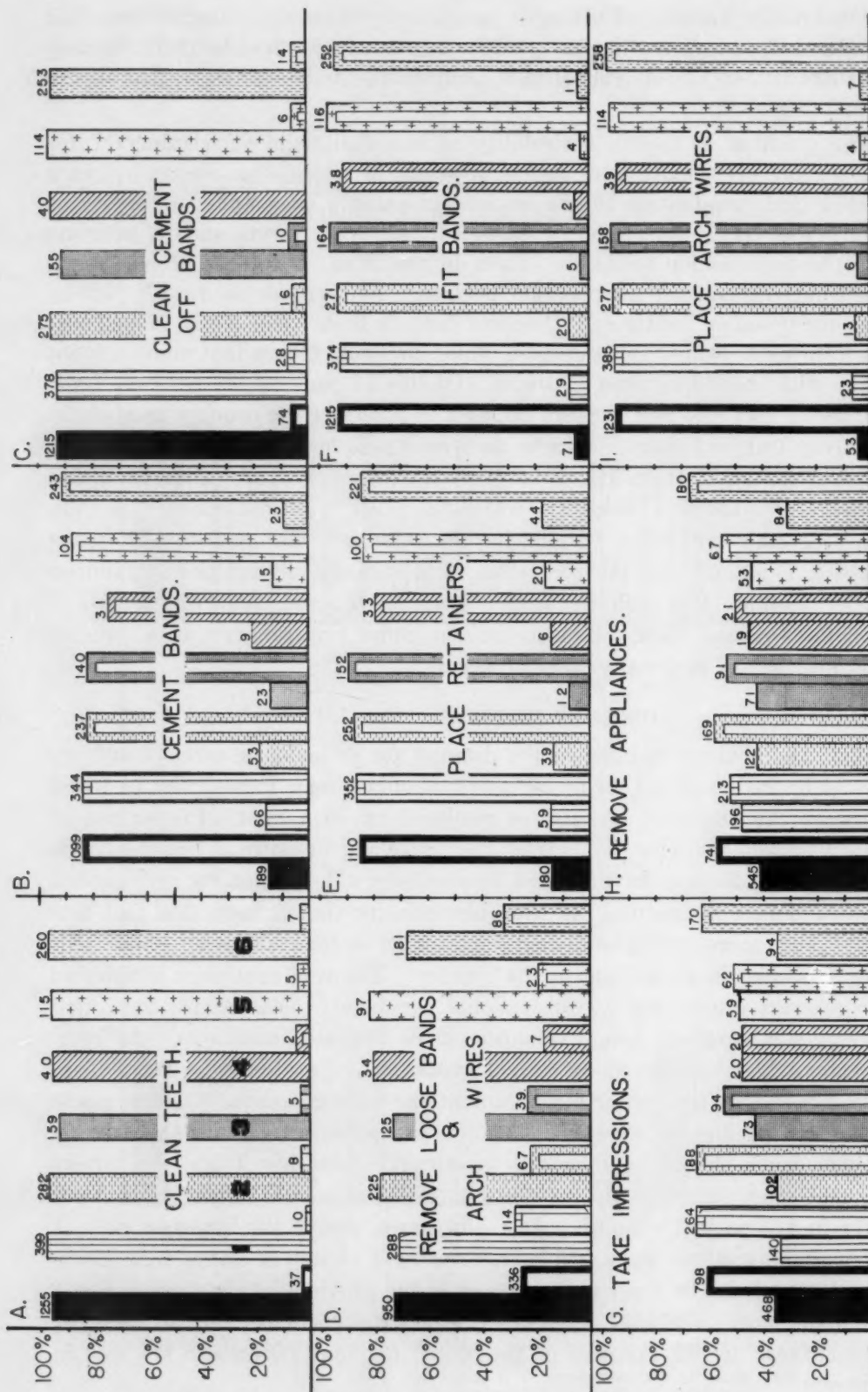
Fig. 11.—A.A.O. opinion on the combined undergraduate-graduate orthodontic training program of the University of California. Is it desirable by 1969? Only the West endorses the program (A). Should we have more, the same or a lesser number of such programs by 1969 (B)? The West is the only section to endorse more such training programs.

the "favorable" column. Putting it very simply, most orthodontists feel that the Federal Government will play a larger role in orthodontics in 1969, but they do not like it. If this is true, then it is up to the orthodontists as a group to do something about it.

The question as to the desirability of the California Curriculum II for training more orthodontists—a course of study in which men are trained in a combined undergraduate-graduate course—revealed a geographic difference of opinion (Fig. 11). As might be expected, the West favors such a program but is the only section to do so. Even in the West, a number of men made strong comments against the program, such as, "Neither fish nor fowl," "inadequate foundation in dentistry," "we are dentists first," etc. Only 77 per cent of the returns answered this question, which probably means that many are not familiar with the Curriculum II status. Of this 77 per cent, 33 per cent favor the program and 43.1 per cent are opposed to it. Over the country as a whole, 31 per cent feel that there should be more such programs, 4 per cent think that we should maintain the status quo (just the University of California), and 34.2 per cent endorse a reduction which, in effect, would eliminate the California program completely. In collating the answers to this question, the strong impression is gained that the profession as a whole is not sufficiently familiar with Curriculum II to judge it. As a point of interest, American Board of Orthodontics results show that men trained under this program have done as well as men trained under any other program.

AUXILIARY PERSONNEL (FIG. 12)

With the obvious increase in the demand for orthodontic services and the relatively limited facilities for training orthodontists, some means must be found to increase the efficiency of services rendered by each man. Proper use of auxiliary personnel is essential. With the increasing pressure of practice, more and more orthodontists have turned to ancillary aid—hygienists, technicians, and extra dental assistants. As the questionnaire shows, most men feel that they will have more professional-degree personnel in their offices by 1969. This feeling is evident in all sections of the country. The same sentiment is reflected in the answers concerning nonprofessional personnel. This means, then, that more junior associates, more hygienists, more chairside assistants, and more technicians will be employed by orthodontists. The question concerning ancillary help was answered on 88.6 per cent of the questionnaires. Of this group 81.8 per cent predict an increase. This creates problems. Just what work and how much work should be relegated to others? State board laws are pretty strict, and most states forbid anyone but the dentist and hygienist to work directly in the patient's mouth. Just how much should the hygienist do? A series of nine questions was asked here, covering a variety of duties from cleaning the teeth, which 96.2 per cent agree is in the province of the hygienist (2.8 per cent did not) to placing arch wires, which was checked "no" by 94.4 per cent and "yes" by 4.1 per cent of the total. Regional differences are seen in the answers.



(ACTIVITIES OF DENTAL HYGIENISTS)

Fig. 12—The role of the hygienist in orthodontics by 1969. Note the relatively strong endorsement for having the hygienist take impressions and remove appliances (G and H). There is strong rejection of the idea of having the hygienist fit bands and place arch wires (F and I).

Should the hygienist cement bands? On this, the Northeast, Middle West, and Plains States show the least disfavor, with 16.1 per cent, 18 per cent, and 21 per cent, respectively, approving. The West has only 8.6 per cent in favor and 91 per cent opposed. The returns clearly approve of the hygienist cleaning cement off bands that have been cemented (94.8 per cent "yes," 5.2 per cent "no"); yet, in practice, how many orthodontists avail themselves of this service?

As for the hygienist removing loose bands and arch wires, there is less unanimity of opinion, although the majority feel that this is permissible. Here, too, regional differences are observed; 81.5 per cent of the orthodontists in the Southwest approve, while in the West only 67.8 per cent favor having the hygienist remove loose bands and arch wires.

Should the hygienist place retainers? The compilation of returns shows that orthodontists are strongly against having the hygienist place retainers. It is significant, however, that even though 1,110 said "no," 180 said "yes," which represents a six to one ratio. The same unanimity is seen in response to the question of having the hygienist fit bands. Only seventy-one men (5.4 per cent) feel that hygienists are qualified, while 1,215 say "no."

Should the hygienist take impressions? A broad geographic difference is noted in the answers to this question. Orthodontists in the Northeast are opposed to this by a two to one ratio, and those in the West are almost as strongly opposed. In between, however, the climate is more favorable. While the Middle West orthodontists feel almost exactly as those in the West, the Southern returns are 42 per cent in favor and 55 per cent against, the Plains States are evenly divided (48 per cent to 48 per cent), and the Southwest is barely against (49 per cent to 51 per cent). This shows that there is considerable sentiment in favor of hygienists taking impressions. Many men commented that they would vote "yes" if it were legal in their state; others said that their answer was "no" only because hygienists were not trained in this procedure. From the figures, it is reasonable to assume that more and more hygienists will be taking impressions for orthodontists. As one man from New York writes: "If these girls are qualified to lacerate the delicate periodontal tissues, certainly they can stand behind the patient, holding a tray filled with alginate in the patient's mouth. They usually mix it, anyway."

A similar division of opinion is seen with regard to removal of appliances by hygienists. The West is strongly opposed (67.4 per cent against to 31.4 per cent in favor), but the Northeast is more favorably disposed (48.8 per cent in favor and 52.2 per cent against). The Middle West, South, Plains States, and Southwest are distributed in between, so that the total is a decisive 56.8 per cent against hygienists being permitted to remove appliances as opposed to 41 per cent in favor. By actual count, 545 would permit hygienists the privilege and 741 would deny it.

Should the hygienist be permitted to place arch wires? This finds little support. A number of strong comments on the questionnaires indicate that placing arch wires is the heart of orthodontics and should be reserved for the orthodontist, if anything is.

The way it now stands, then, the compilation of results approves of hygienists cleaning teeth, cleaning the cement off bands, and removing loose bands and arch wires. Much support exists for impression-taking and removing appliances, but fitting and cementing bands and placing arch wires and retainers are taboo.

New Zealand has a dental nurse program. By 1969, should we adopt such a program in the United States? It appears that American orthodontists are not ready to accept the New Zealand dental nurse program. Many commented that they are unfamiliar with the plan, which accounts for only 74.6 per cent of the returns having answers. Almost 30 per cent are favorably inclined, but 45 per cent cannot see such a program in the United States by 1969. It is interesting that opinion is almost equally divided on this issue in the Plains States and Southwest.

Since the opinion was expressed earlier in the questionnaire that there will be more nonprofessional personnel in orthodontics in 1969, it is only natural that the answers support the thesis that more technicians should be trained in indirect appliance construction (759 to 424; 58.2 per cent to 32.5 per cent). Orthodontists in New York, New Jersey, Pennsylvania, Massachusetts, and neighboring states are the most sure that this should be done (64 per cent "yes," 28 per cent "no"). The men from the Plains States actually expressed a negative opinion (40 per cent in favor and 50 per cent opposed). However, the latter figures are based on a total of thirty-eight answers from the Plains States as compared to 411 answers from the Northeast.

The opinion is frequently expressed that it is not possible to train a man adequately in a one-and-one-half-year graduate course. Most orthodontic problems are of longer duration, and cases started are seldom finished. One way to prepare the young graduate better clinically would be an internship of one or two years. If medicine feels this necessary, certainly the delayed reaction nature of orthodontic adjustments and the long period of management of each case make clinical experience equally important. Resulting opinion on the questionnaire shows that, as a group, practicing orthodontists feel that an orthodontic internship for the recent graduate is desirable and would be beneficial to both the student and the preceptor. The West and Southwest see the greatest desirability of an internship program; the Northeast is the least in favor. When it comes to making the program compulsory, however, the returns are over two to one against (780 to 333). The Northeast is again most strongly opposed to such a possibility. The South, Southwest, and West show less opposition. Only 68 per cent answered the question as to whether there is a trend toward internship, which means that many just do not know. Of those who did answer, 48 per cent felt that no trend was evident, and 21 per cent could foresee such a trend by 1969. If, indeed, there will be such a trend, the South and Southwest are the most clairvoyant.

OFFICES AND LOCATIONS

The increasing demand for orthodontic services will not only affect the number and training of orthodontists and their use of auxiliary personnel but

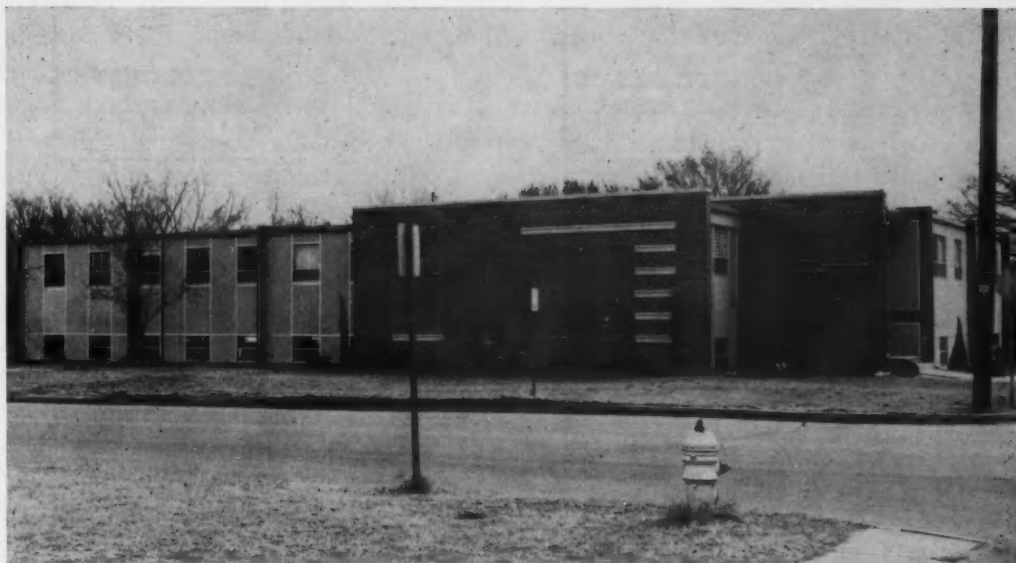


Fig. 13.—New bungalow office of Dr. J. Victor Benton in Wichita, Kansas.



Fig. 14.—Operator in bungalow office of Dr. J. Victor Benton, showing efficient arrangement with soldering and welding technician behind operating units.

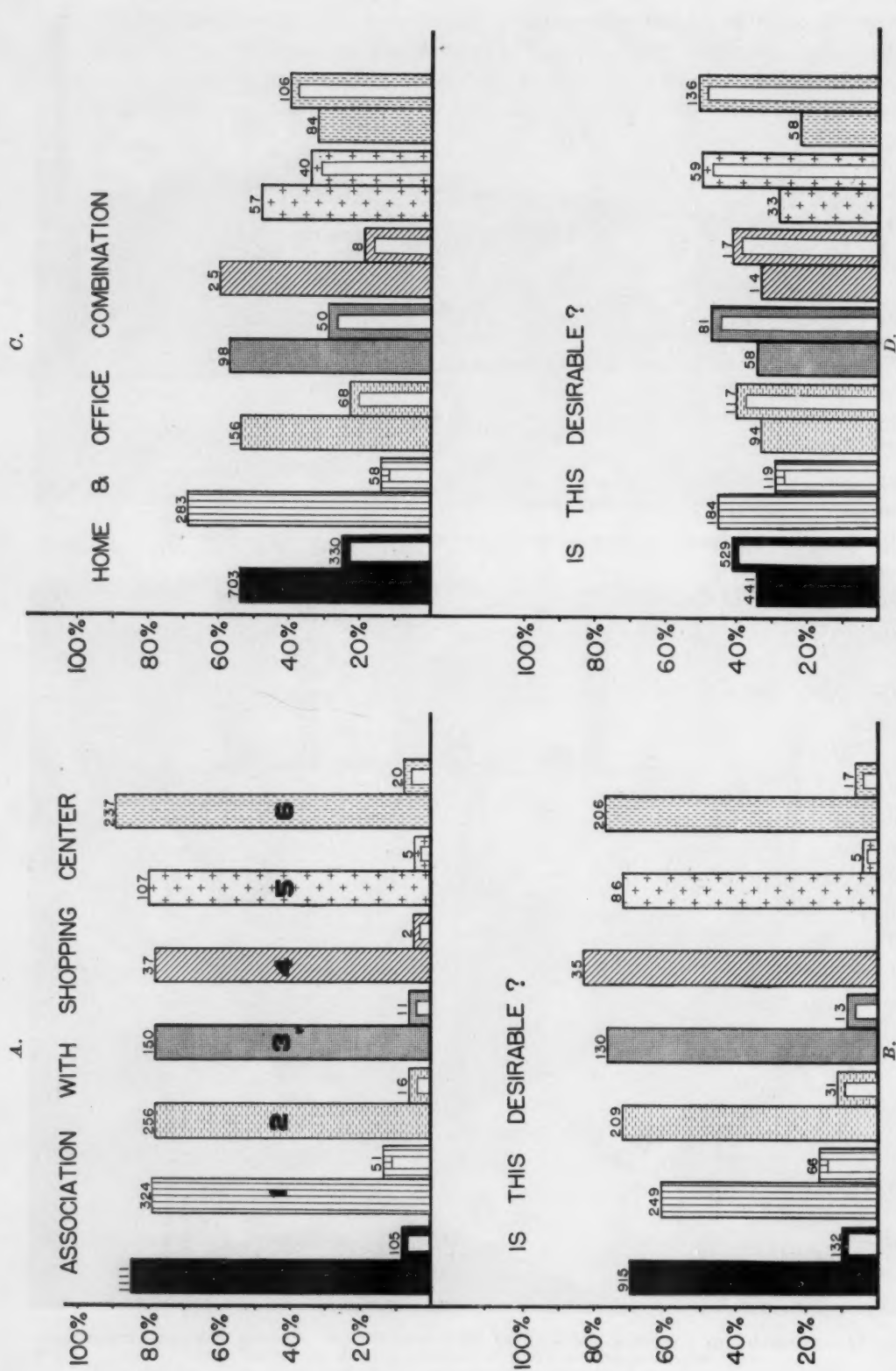


Fig. 15.—A and B, Are more orthodontists going to have offices associated with shopping centers in 1969? A.A.O. members think so and feel this desirable. They are less sure about more home and office combinations and actually cast a larger negative vote on their desirability by 1969. Note the great sectional differences of opinion (C and D).

undoubtedly will be reflected in the types of offices and their locations. No longer is the specialist confined to the biggest buildings in the heart of the largest cities.

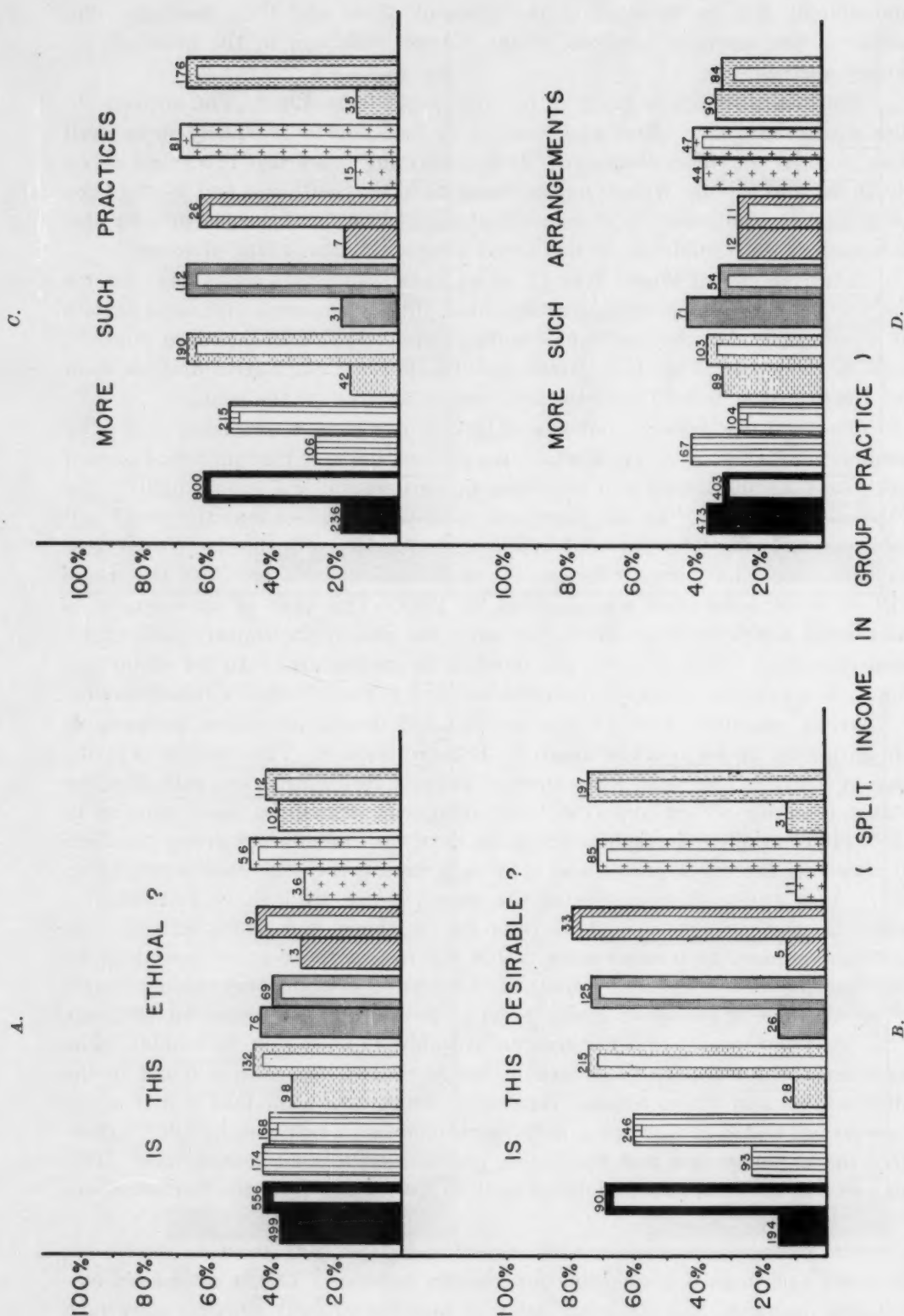
Are bungalow offices likely to be more popular by 1969? The answers indicate that bungalow offices and location in the suburbs are likely to be even more popular ten years from now. It is interesting to see that this trend in the Northeast and Middle West is not as strong as in the Southwest and West (Figs. 13 and 14). The question of location of offices downtown versus uptown also indicates strong confidence in this trend away from the center of town.

Since the end of World War II, as we know, shopping centers have become the vogue. Professional concentrations have allied themselves with these centers in some areas. Are they to become more popular? From the answers, it would certainly seem so (Fig. 15). Here, too, the weakest affirmative opinion is in the Northeast—a full 10 per cent less than in the rest of the country.

Questionnaire answers indicate a lack of certainty about home and office combinations (Fig. 15). As a whole, the returns indicate that the trend toward more such arrangements will continue, but geographic differences qualify the 701 to 329 majority. In the Northeast, 69.4 per cent feel that the trend will continue and only 14.3 per cent believe that it will not. On the West Coast, however, only 31.4 per cent foresee the trend and 39.7 per cent feel that there will be fewer home-office combinations by 1969. This type of arrangement is considered desirable in the Northeast only; the rest of the country feels otherwise (the West Coast by a two and one-half to one margin). In the group as a whole, 41.5 per cent believe it desirable and 48.2 per cent consider it undesirable.

Group practices, with various medical and dental specialties represented, are springing up all over the country. Is this desirable? The response is favorable by a five to one ratio. The answers indicate by a four to one ratio that the public is better served and that these arrangements will be more popular in 1969 (1035 to 60). In some areas there have been established group practices in which all income is pooled and split on a fixed percentage each month (Fig. 16). As a group, those answering the questionnaire are inclined to think this unethical (556 to 499). Returns from the Northeast and South actually consider this ethical by a small margin, but the rest of the country considers the practice unethical. The full impact of this feeling is evident when the answers as to whether this type of group practice is desirable are compiled (901 say "no," 194 say "yes," 68.5 per cent unfavorable, 14.8 per cent favorable). The least censure for this trend is seen in the Northeast; the most is found in the Middle West and Plains States. Naturally, the returns show that A.A.O. members do not feel that more such practices should be in existence by 1969. However the majority feel that more such practices will, indeed, exist then. This majority in the total group is due largely to the returns from the Northeast and South, however.

The picture is very clear with respect to independent group arrangements in which each man is responsible for his own practice. This is considered ethical and desirable, and the compilation of answers strongly predicts more such arrangements by 1969.



PARTNERSHIPS AND ASSOCIATIONS

The question of orthodontic partnerships would provide an interesting study by itself. Certainly, the data collected in this questionnaire, the comments, and the detailed plans submitted by a number of men provide much valuable food for thought. Many partnerships are being formed now. Because of the importance of the subject, a separate paper is being written on partnerships, based on plans now in existence and on the questionnaire answers. A brief summary of questions and responses is given here.

Proponents of partnerships claim that such arrangements allow better service to the patients, confer less strain on each partner, and permit a more efficient operating setup with less expense per man and more time for vacations. The answers permit an evaluation of whether A.A.O. members think these claims are very valid, just valid, or less valid—a scale of opinion. As Table I shows

TABLE I. PARTNERSHIP ADVANTAGES

CLAIM	VERY VALID	VALID	LESS VALID
1. Better service for patients	508	487	250
2. Less strain for each partner	706	430	102
3. More efficient operating setup	615	446	161
4. Less net expense per man	680	466	82
5. More time for vacations	787	379	66

less strain on each operator and more time for vacations are apparently the most valid attributes. The least valid claim is that the patient gets better service. It is also obvious that the men answering feel that such an arrangement results in less expense per man. Indeed, if the valid and very valid columns are combined, as opposed to the less valid, the opinion overwhelmingly endorses the claims made.

Disadvantages, such as possible friction between partners, one man taking advantage of the other, divided responsibility for therapy, poorer service to the patients, and death benefit difficulties, have been claimed (Table II). The

TABLE II. PARTNERSHIP DISADVANTAGES

CLAIM	VERY VALID	VALID	LESS VALID
1. Possible friction	539	573	125
2. One man taking advantage of other	337	576	298
3. Divided responsibility for therapy	285	497	412
4. Poorer service to patients	111	211	848
5. Death benefit difficulties	194	355	582

answers show that such claims can have validity. The claim of poorer service to patients is rejected, however, and the death benefit difficulties are not considered as likely as possible friction or one man's taking advantage of the other. If the valid and very valid columns are added together, the opinions serve as a word of warning to prospective partners with respect to possible friction, the possibility of one man taking advantage of the other, and divided responsibility. But the returns indicate by a three to one ratio that the advantages

outweigh the disadvantages and show by an eight to one majority that the trend will increase by 1969. Generally speaking, the East Coast looks at partnerships with the rosiest-hued glasses, and the West and Southwest are the least enthusiastic.

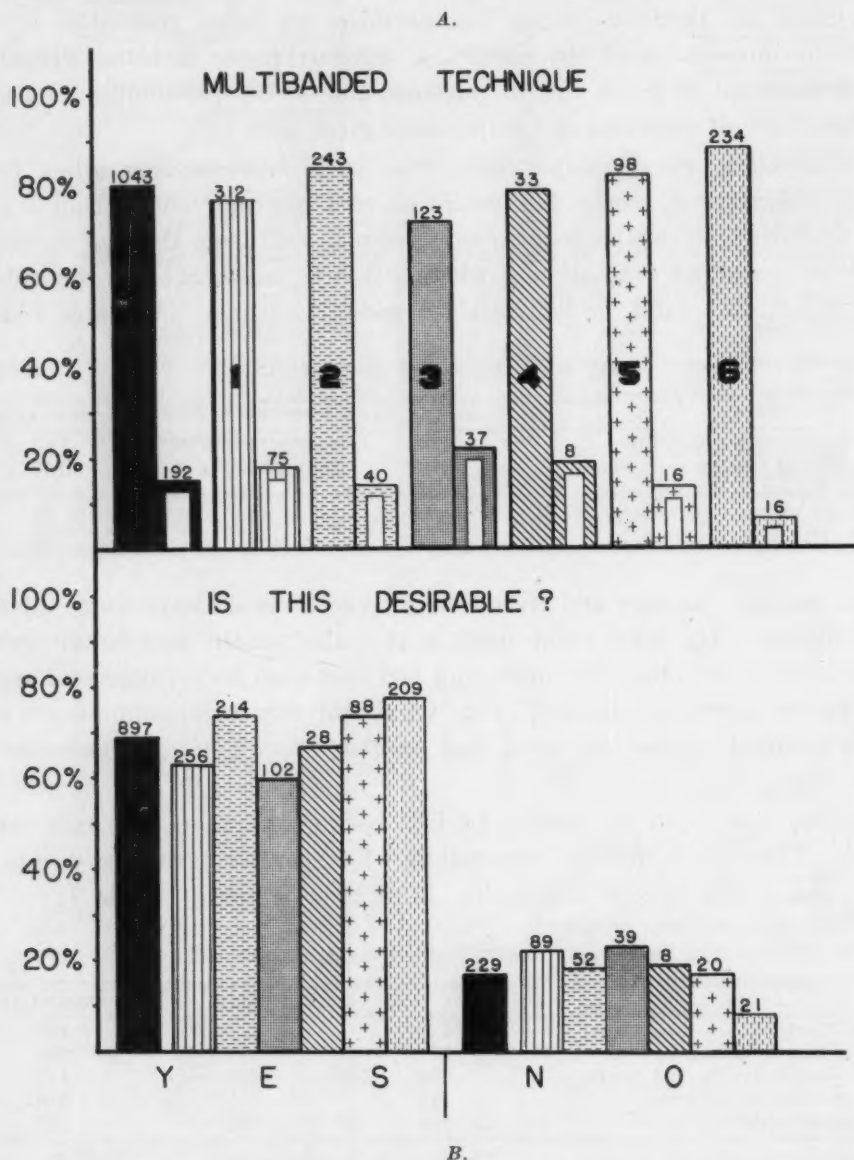


Fig. 17.—A, The trend toward multibanded techniques is considered strong (1,043 "yes," 192 "no"). B, The desirability of such a trend varies with the section of the country.

PRACTICE PROCEDURES AND PRACTICE MAKE-UP

Practice procedures and make-up are vitally important in any appraisal of service now or ten years from now. This is the final section of the questionnaire. More and more orthodontists are employing a multibanded technique routinely. Will this trend continue? The returns say "yes" by a 5 to 1 ratio,

although the South is least sure (Fig. 17). On the question of desirability of the multibanded approach, the group as a whole feels that it is desirable by a four to one ratio. The strongest proponents are found in the Southwest and West; those least enthusiastic in endorsing the desirability of the multibanded technique are in the South and in the Plains States.

A fundamental question that may confront the profession, if the demand for services exceeds the supply of trained men, is: "Should we compromise our present high standards, where we try to render the best possible service to each individual patient, and use the approach so widespread in Europe—activators and removable appliances?" This would permit orthodontists to see more patients, but less could be done for each patient. The questionnaire suggested the possibility of a trend toward removable appliances by 1969. In response 8.2 per cent foresee a strong trend in this direction, 37.6 per cent expect a "moderate" trend, 35.6 per cent look into the crystal ball and see a weak trend, and 14.3 per cent foresee no such trend. Thus, 50 per cent feel that such a trend will be insignificant, and less than one in 10 feels that removable appliances will exert a strong influence on orthodontic philosophies in the United States by 1969. The desirability of this philosophy of mass orthodontics is rejected by a margin of almost four to one. Weighing the percentages for each section of the country, the East Coast is most sympathetic to such a trend; the West Coast and the Southwest are most resistant. The returns indicate, however, that this type of orthodontics will probably be more in demand by 1969. As a sort of summarization, the orthodontists were asked: "Is it better to do some good for many children, or is it better to strictly limit the practice to sixty to eighty active cases and render the utmost possible service to the few? Or is there a happy medium?" The answers are provocative. In the general totals, 28.8 per cent checked the "some good—large practice" approach and 24.2 per cent preferred the "utmost good—small practice" philosophy. However, 1,033 feel that there is a happy medium between the two, and only 125 do not. The "some good" philosophy has its greatest strength in the East, Middle West, and South; the "optimal service" philosophy is strongest in the West and Southwest. The East and Middle West are most sure that there is a happy medium; the West and Southwest are least sure.

Numerous comments by those attempting to answer all the questions indicate that it is difficult to predict what the average case load, exclusive of retention and observation patients, should be or will be by 1969. Each man was asked to estimate what the load should be, first without auxiliary personnel and second with auxiliary personnel (Fig. 18). The purpose of this was to determine how important auxiliary personnel is in increasing the case load. The estimates without auxiliary personnel run from twenty-six cases to 300 cases per man, which is a large spread, but the greatest cluster of estimates centers between seventy-five and 100 cases. Three-fourths of all answers lie between fifty and 150 cases for a practice without auxiliary help. The estimates for a case load in the practice with auxiliary help show a broad range, too, but the great majority of answers are between seventy-five and 200 cases, with the greatest

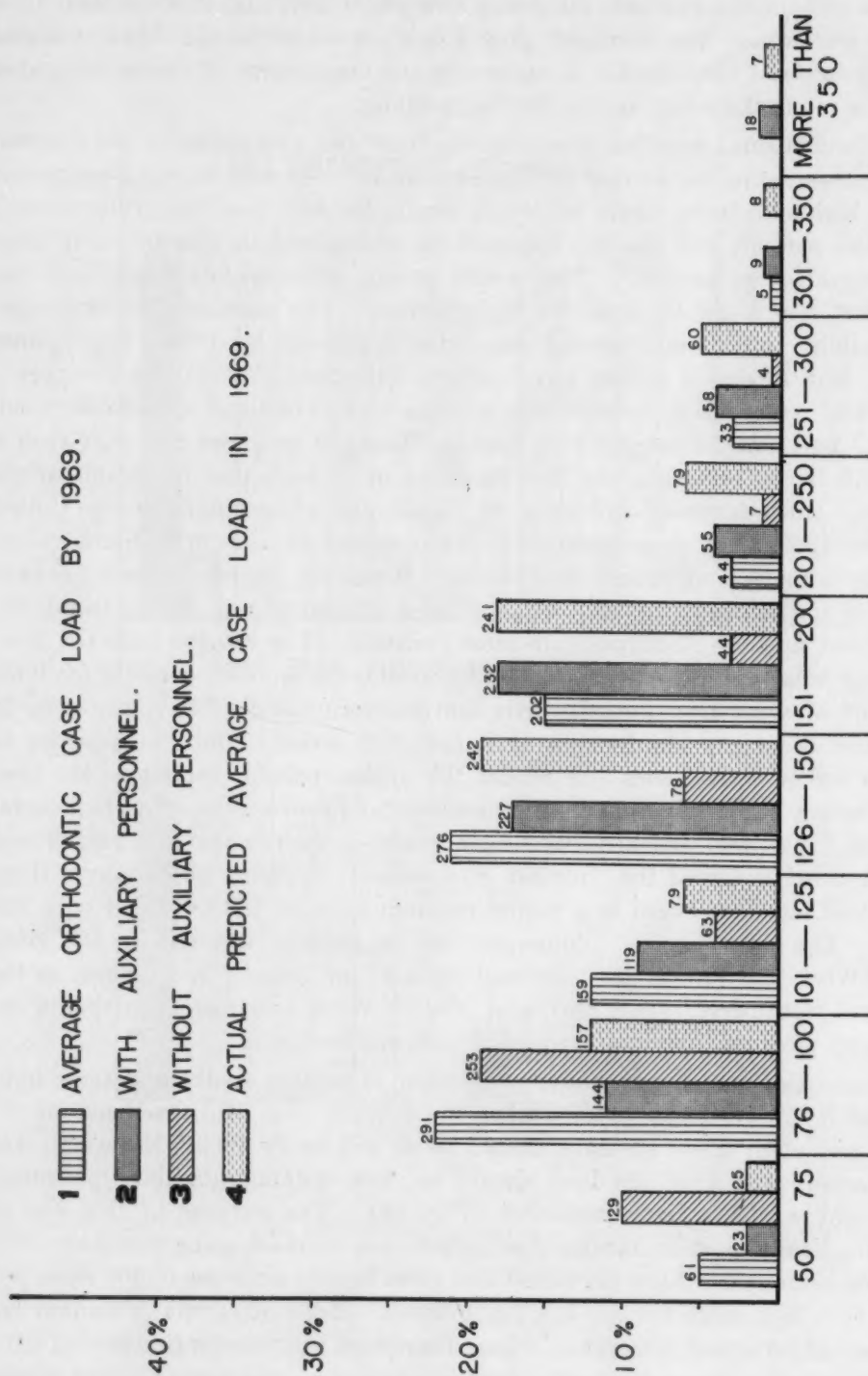


Fig. 18.—Orthodontic case load in 1969. 1, Ideal orthodontic case load in 1969. 2, Optimal case load for each orthodontist with auxiliary personnel. 3, Optimal case load for each orthodontist without auxiliary personnel. 4, Actual predicted average case load for each orthodontist in 1969.

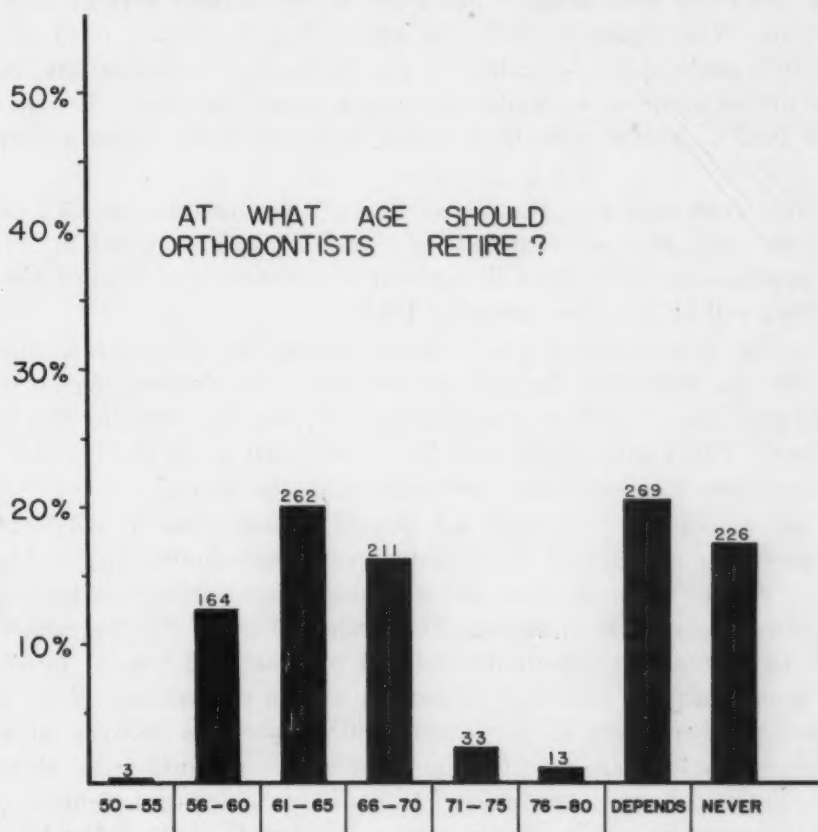
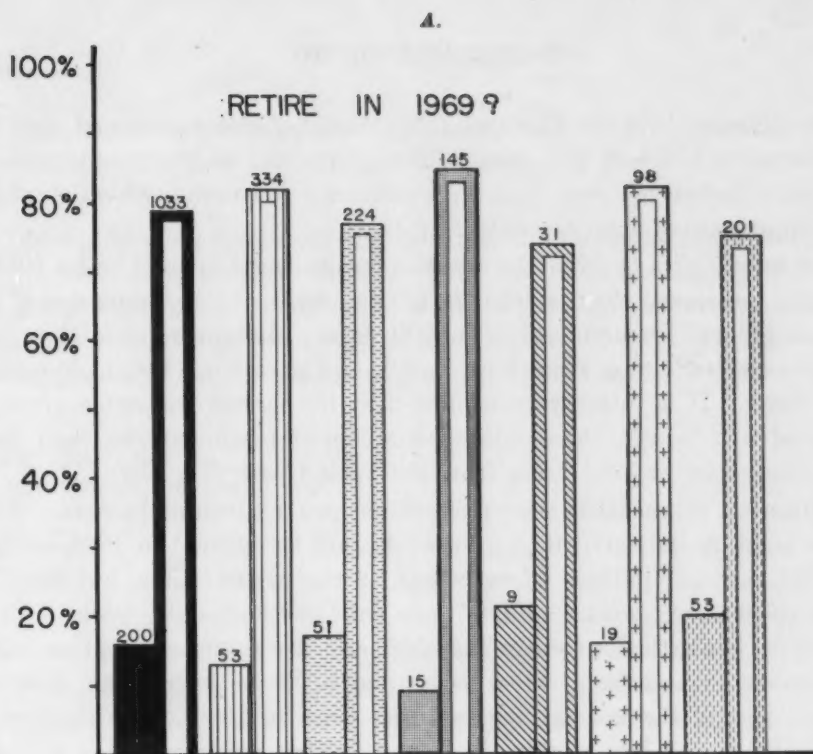


Fig. 19.—A, Number of orthodontists who will retire by 1969. B, Age of orthodontist retirement.

single concentration between 125 and 150. A significant number of men made estimates between 176 and 200 cases. Thus, from the answers, estimates average fifty cases higher per case load with auxiliary personnel, which emphasizes the great importance of ancillary aid (Fig. 18).

On the question as to what the actual average case load will be by 1969, the estimates are amazingly close to what is felt should be the optimum size of practice with auxiliary personnel—125 to 200 cases. However, estimates ran as high as 750 cases (one man from New York), and more than 140 made estimates above 225 cases. It is interesting to note that the largest estimates came from the Northeast and South; the smallest estimates of predicted case load for the average orthodontist in 1969 came from the West Coast (Fig. 18).

The question of vacation time per year shows a constant pattern. Almost half of the answers indicated that four weeks will be optimal in 1969, obviously based on the vacation pattern of each man at the present time, but more than one-fourth checked six weeks, and 8.7 per cent checked eight weeks. The returns indicate that orthodontists in the Northeast are the most vacation-minded, as their answers showed the greatest percentage of longer vacations. How many days a week should the average orthodontist work in 1969? The answers concerning the length of our workweek show a strong preference for a five-day workweek (56.4 per cent checked this), but a significantly greater number of men from the West Coast checked four and four and one-half days (22.8 per cent and 30.0 per cent). According to the figures, the orthodontists from the Northeast prefer a longer workweek but also a longer vacation. Men in sunny California tend to prefer more leisure time each week but shorter actual vacations.

Will fees keep pace with the cost of living? To this question 63.2 per cent answer "yes" and 30.3 per cent answer "no." The East Coast is definitely the most pessimistic. More than 28 per cent of the men from around New York feel that fees will be relatively lower in 1969.

Of interest to orthodontists in determining the net manpower available in 1969 to meet the increasing demand for service is the number of men who retire (Fig. 19). Returns show that slightly less than one man in five will retire by then. The Plains States and the West Coast show the highest retirement percentages; the South and Northeast show the lowest.

The last question is "At what age should orthodontists retire?" This, as much as anything, shows how much the average orthodontist enjoys his work (Fig. 19). Truly, it would seem to be a vocation-avocation relationship. Of the 1,181 who answered the question, 226 wrote in "never." The general feeling seems to be that retirement depends on physical and mental factors, not financial considerations, and that retirement means stagnation. Even though the greatest number (over 35 per cent) wrote down ages between 61 and 70 years, these estimates were qualified by the conditions mentioned. Many men wrote of "cutting down" gradually. One of our elder and venerated men answered the question with a quotation from William Hazlitt's "The Feeling of Immortality in Youth": "The only true retirement is that of the heart; the

only true leisure is the repose of the passions. To such persons it makes little difference whether they are young or old; and they die as they have lived, with graceful resignation."

The words of Samuel Johnson would fit the thoughts and actions of a great rebel who is a distinguished member of the Northeastern Society: "Don't think of retiring from the world until the world will be sorry that you retire. I hate the fellow whom pride or cowardice or laziness drives into a corner, and who does nothing when he is there but sit and growl. Let him come out as I do and bark!"

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THE CARE OF ADOLESCENTS

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I WOULD not presume to talk to you about caries, malocclusion, or pyorrhea, but I do welcome this opportunity to talk to you about some of your patients. After all, it is primarily people, not diseases, that you and I treat. Whether the adolescent has a Class III occlusion or diabetes is only coincidental. It is how well we treat him, how well we understand his needs and personality, that makes the difference between a fair and an excellent job, between a routine or a satisfactory experience for us, between the patient's submission to our efforts and his wholehearted cooperation, and between his acceptance of what we do and his heartfelt thanks and friendship. These extras make our lives and our efforts so much more worth while and so much more meaningful.

We adults can do so much more for young people than to fill or move their teeth or adjust their diets and insulin. Our adolescent patients are at the age when other adults than those in their own families can do a great deal for them. We are not emotionally attached to them; they are not breaking away from us. They do want and need the support of some adult, however, and if we will but listen and not advise until asked to, we can be of tremendous help.

During the past few years the concept of the whole child has become quite popular, but I am sure that too frequently the concept is not carried over into practice. When we deal with the adolescent, the concept of the whole child is of particular importance, for here we are dealing with a person who is in a period of rapid growth and development and whose adult patterns are quickly being set. Therefore, I would like to talk to you not of the interrelationships of various parts of the body but about our patients themselves—their personalities, their characteristics, their attitudes, and their needs. Frankly, although my comments will be about adolescents themselves rather than about their teeth, gums, or other dental problems and although they are directed to the care and understanding of young people, much of what I have to say would be equally applicable to the care of patients of all ages.

The recent increase in interest in the care of adolescents can be compared with the concurrent, though more widespread, increase in attention which has

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been given during the past few years to the care of the elderly. Geriatrics and the care of adolescents have at least one factor in common, namely, that their frame of reference is to an age group rather than to a disease or to an organ system. Treatment, training, and research in these two fields focus upon the physiologic and psychologic characteristics and needs of the persons involved. The peculiarities which their ailments exhibit at this particular time of life and the ways in which these relate to this person's past and that person's future are considered. For instance, both geriatrics and adolescent medicine interest themselves in hypertension in a person who belongs to one of these age groups, rather than in hypertension itself. In short, there is an effort to try to understand and to treat the patient and his disorder in terms of the peculiarities of the age group to which he belongs. The basic philosophy is that both the patient himself and his disorder have differences during various age periods which should be taken into account in planning treatment and management. What these are and how we have tried to meet them in our clinic may be of interest to you.

It is quite difficult to assign fixed age limits to the field of adolescent medicine. Adolescence can be defined as a state or process of growing up from childhood to manhood or womanhood. However, although this is a perfectly satisfactory concept, it is not very helpful from an administrative standpoint. We know that adolescence usually begins and ends earlier in girls than in boys and that the time of the appearance of its phenomena varies considerably from person to person. For clinical purposes it is necessary to set limits, however, and in general we regard adolescents as being persons between the ages of 12 and 21 years. When we do this, we need to remember that each of these figures is at times high and that chronological age is a very poor yardstick to use in connection with this age group. Furthermore, we need to remember that although there are definite advantages in considering a patient in terms of the age group to which he belongs, it is of equal importance to think of this person's emotions, physiology, and diseases as part of his total life picture in which various periods of earlier growth and development and future needs must modify one's evaluation and treatment.

Knowing your patient is, of course, important in the care of all illness and in the care of all patients, regardless of age, but it is imperative in the management and treatment of adolescents. No other age group furnishes us with so good an opportunity to supplement our previous training and scientific thinking with practice in being thoughtful. This is because of one of the adolescent's outstanding traits, his excessive interest in himself, which determines to a considerable degree the way in which he should be managed. No other person is so insistent that you pay attention to him as is the adolescent. No other is so quick to ignore you when you do not. The adolescent feels so keenly the need to develop his own ways, his own ideas, and his own personality that he is very susceptible to the advances of anyone who is not quick to suggest or to criticize and who shows a genuine interest in him. At the same time, he is

very quick to reject anyone who tries to impose his will or ideas upon him, whose interest is feigned, or who seems to have little regard for what he is, does, thinks, says, or hopes. In short, he literally demands that you pay as much attention to *him* as you do to his symptoms. When you fail to do so, you may expect monosyllabic replies, broken appointments, discarded advice, and unused appliances.

How does one avoid the adolescent's rejection and take advantage of his susceptibility to the adult who shows an interest in him and who seems to respect him? We think it obvious that the adolescent's visit to a physician's office should differ from that of a child. He is no longer a little person, being taken to the doctor by his mother, who will tell the story and to whom will be given the explanations and the advice. He is now old enough to have his own doctor, tell his own story, listen to his explanation, ask questions, and be given advice. In short, the adolescent is ready to begin to take the responsibility for his own health. The more this can be done, the better he will cooperate and the greater will be the doctor's contribution both to the adolescent's well-being and to his acquisition of maturity.

This does not mean that parents no longer play a part. Their story, their anxiety, their questions will have to be given attention, but our emphasis should now be on helping the young patient in our role as his physician. He has reached the stage of development where he can profit from, and may badly need, the benefits which a confidential relationship with a doctor of his own offers. Although the wise doctor will be more willing to listen than to advise, it must be remembered that some adolescents fear independence, seem unwilling and unable to make decisions, welcome support, and lean on their physicians and their parents. These will temporarily need our positive assurance. Only when we build their confidence can we expect them to want to make choices and do without our advice. Their anxiety is only increased if we are indecisive or if we insist too soon that they make choices or decisions.

In our Adolescent Unit it is customary to interview the parents, preferably both of them, on a day prior to the patient's visit. The purpose of this is to avoid having the boy or girl wait outside during the hour that it takes the mother and father to tell the story as they see it. Such a wait would not improve an adolescent's humor and would hardly indicate that he is our primary concern. When circumstances do not permit these visits to be on separate days, we first see the patient briefly, explain the situation, and suggest that he spend the interval during which we talk to his parents in getting some laboratory tests, a vision examination, etc. In short, his being deferred is recognized, excused as unfortunate but unavoidable because of the demands of social graciousness, and thereby prevented from being an annoying experience.

Such things as this can make a great difference. It is not that adolescents need to be handled with kid gloves; it is, rather, that it is important to make these young persons realize that we consider them our patients and that they are our chief interest.

It is important for us to do everything possible to avoid an authoritarian atmosphere. For years parents, teachers, and others have been telling these

young persons what to do. They quickly recognize and respond well to a physician who is slow to suggest, who is more eager to listen than to talk, and who usually listens without apparent approval or disapproval of what he is told. A small office is better than a large, imposing one. If we customarily sit behind a desk, we come out from behind it and talk to these young persons without a barrier. Although a friendly, intimate, nonauthoritarian atmosphere is best, this does not mean that the doctor should become one of them; he should remain a doctor. There, too, is a vast difference between having and seeming to have authority and being authoritarian. Adolescents want someone interested in them, someone they can trust and respect, but they are suspicious of and uncomfortable with adults who are too friendly, whom they cannot respect, and who, when asked for an opinion, agree with everything they say. Adolescents sense ability, wisdom, strength, and fairness; they need and respect a firm stand when a distinction between right and wrong or a difficult situation is clearly involved.

Many of these details of management are applicable to other age groups, but they have been mentioned to emphasize the importance of giving the adolescent the maximum of personal interest. We can perhaps be quite successful with a baby if we seem only to deal with the mother, and we may satisfy some adults even if we focus on their disease. But unless we show a real interest in the adolescent himself, he will not return or will do something which will make us notice him. We may regret or be annoyed by his excessive interest in himself, but unless we recognize it and utilize it there is little likelihood of our being of as much service to the adolescent patient as his ailments and his development deserve.

So much for dealing with these young persons in ways which both emphasize our interest in them as individuals and our respect for them and also consider their characteristic of being overconcerned with themselves. What are some of the other matters concerning adolescents which one should understand? How do these relate to treatment?

Adolescents are very much concerned with their bodies. Their blemishes may be very interesting or very insignificant to a doctor, but the adolescent regards them with concern and he wants adults also to take them seriously. He will not look with favor on the physician who thoughtlessly exhibits them to others as being something very interesting or casually shrugs them off as inconsequential. The physician who does this fails to show that he understands how much adolescents worry about such things and how much an adolescent can be upset by anything which he feels is wrong with his body. These matters are charged with emotion for the adolescent; the same things are usually as nothing to the little child or to the adult.

Similarly, adolescents can be unduly worried by their growth and sexual maturation. The girl who is taller than her friends or who is flat-chested and the boy who is short or beardless may become quite upset. It is not enough to tell these young persons that they will change or that they should learn to

accept themselves. They need repeated reassurance, our continued interest, and in most instances a better understanding of the difference between being abnormal and being average.

Sex is a new and disturbing matter to many. They have not yet adjusted their thinking and their behavior to this powerful drive and to their community's customs. Some girls find growing up—the prospect of being an adult female—frightening and make themselves unattractive by overeating or by persisting in tomboyish pursuits. Some boys, doubting their masculinity, seek to prove it to themselves by behavior that they would not otherwise choose. It is a confusing time for them, and not a few of this age group's symptoms grow out of the anxiety which conflicts regarding sex produce.

One of the most important things to remember about adolescents is that they need and are seeking prestige and recognition from their contemporaries. To build confidence and to strengthen their egos, they need to be trusted and they need the happy experience and the recognition which achievement and success bring. There are few adolescents who do not get their full measure of criticism and failure. Almost all would benefit from more trust and praise and success, and it would be well for adults more frequently to recall that old Irish saying, "Praise youth and it will prosper." The adolescent's achievements need not be outstanding, but they need to be satisfying and they need to be recognized by someone else.

An adolescent wants to be somebody, to earn his own place in the sun. To do this, he needs to be very active, strong, and aggressive. Such activity will often be in conflict with a doctor's advice. At times rest may be necessary, but we think that it should be suggested much less frequently for the adolescent, and only after much more thought, than it would be for older or younger patients. Inactivity is not in the adolescent's tradition; it is not compatible with his need for success; it does not permit the failing student to get compensatory recognition in athletics or in any one of the number of other fields which his companions consider important. Thus, we should think first of strengthening rather than resting those who complain of fatigue or of a weak back. When advanced heart disease or an appliance demands restriction of strenuous activity, thought should be given to helping to provide some appropriate activity which can yield recognition and therefore develop confidence. (It might be well to add that not only is rest to be recommended only after careful consideration but that, furthermore, the adolescent who is inactive, who does not resist rest, who is not seeking success, and who, perhaps fearing failure, pretends indifference should have attention. His is not a normal adolescent's behavior.)

No less important to adolescents are their changing relationships to parents. It is a time of breaking away from home, of trying to stand independently, of temporarily leaning on the crowd or club or sorority as they rely less on their parents and still hesitate to stand alone. It is also the time of changing feelings toward each parent and of the establishment of strong heterosexual attitudes. Vacillating in their desire and capacity to be independent and in the quality of their feelings toward each parent, many adolescents behave in an awkward

fashion. Realizing that it is imperative that they learn to be independent and that their love of each parent be readjusted, but apparently unaware of how dependent we are on one another and how essential cooperation is, often neither adolescents nor their parents behave in a very consistent or very pleasant manner. Those who depreciate their parents most and are most cruel to them are the insecure ones who find leaving their parents the most difficult. It is as though they can bear to tear away only if they deny how important their parents have been to them. It can be a trying time for them and an equally trying time for the anxious, insecure, possessive parent who fears for them and at the same time clings to them. When the parent is possessive or fearful and allows a son or daughter little freedom, there is usually an unhappy period of rebellion. Fostering independence, helping to build confidence, interpreting parents' anxiety to young people, and persuading parents that their function is to produce an adult, not just a child, are important parts of the doctor's job. Not a few adolescents become unhappy, anxious, and symptom-ridden when faced with the dilemma of loosening ties to those they love and at the same time resisting overprotection.

These matters and the sort of things which worry adolescents (conflict between their parents, the choice of a career, failure in school, being popular) or confuse them (religion, the death of a friend, an admired adult's asocial behavior) are to be kept in mind when we try to help any one of these adolescents, regardless of his symptom. Just as his business can bring satisfaction or worry to an adult, so can school (the adolescent's business) affect the young person. All too often it is school that gives him a pain, makes him sick, gives him a headache. The doctor who does not inquire into the patient's school life with respect to how satisfying it is and how successfully the patient is getting along fails to take one of the most important parts of the adolescent's story. By being equally alert to such things and ready to let our patient discuss them as well as his complaint, we stand the best chance of helping him with his ailment and of improving some of the matters which may or may not be related to it.

A final word is in order concerning what we must know about adolescents and the ways in which some of their ailments differ in significance and behavior during this period. Adolescence is a period of change, and we need to be cautious in our predictions and to base few, if any, judgments on a single observation. Serial observations over a considerable period of time are much more likely to be valid, whether the problem is one of physical growth or of emotional growth. The adolescent's great capacity for change is common knowledge, but if one is used to dealing with adults he may forget how rapidly an adolescent's condition may change.

Obviously, one needs thoroughly to understand the nature of adolescent growth and development, for variations from average rates of growth, even though they are well within normal limits, bring problems. The differences in the significance of amenorrhea, menorrhagia, and dysmenorrhea in the adolescent and in the adult are important, as are also the very different problems associated with the convalescent care and evaluation of knee and back injuries

which this group presents. Obesity in the adolescent suggests the need for greatly increased exercise and, because of his growth needs, very careful consideration of any reduction of food intake. In the adult, exercise is more cautiously increased and the food intake can be more drastically reduced. Hypertension in the adult calls for cardiovascular and renal studies, and, although these cannot be neglected in youth, one is more likely to find that tension and anxiety are the causative factors. Finally, in treating those adolescents who have handicapping disorders (epilepsy, cerebral palsy, congenital heart disease, hemophilia), we must remember that not only the usual problems of adolescents but also certain other matters, such as driving a car, marriage, advanced education, and employment, confront them and will require extra thought.

I have attempted, in a sketchy way, to suggest that adolescents *are* different and that the characteristics of their physiology and of their personality structure as well as the special needs of this age group must be understood. The adolescent patient responds best when the treatment plan takes him into consideration—what he is like and what he needs—and when it is not confined just to the care which his disease requires. I trust, too, that these few remarks have suggested some of the extra things which all of us—dentists, physicians, teachers, and ministers—can do to help adolescents during this period of development. Certainly the better we understand them, their hopes, their worries, and their needs and characteristics, the better able we will be to treat their ailments effectively and also to assist them to become better adults.

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Orthodontic Profiles

LLOYD STEEL LOURIE, SR.

LLOYD S. LOURIE was born in Keokuk, Iowa, on Sept. 3, 1877. He graduated from Keokuk Dental College in 1899, after a five-month interruption brought about by service in Company A of the 50th Regiment, Iowa Infantry, during the Spanish-American War (he was discharged in September, 1898). He graduated from the Angle School of Orthodontia in St. Louis in 1900, having enrolled as a student in one of the first classes conducted by Dr. Edward H. Angle.

While practicing orthodontics in Keokuk in 1900 and 1901 Dr. Lourie taught orthodontics at the Keokuk Dental College and also served as instructor at the Angle School of Orthodontia. He moved to Chicago in 1901, where he practiced orthodontics exclusively until his retirement from active practice in 1938. Following his retirement, he moved to Sanibel Island, off the west coast of Florida—probably the best shell-hunting beach in the country. Over the years, he acquired a magnificent collection of rare shells. After a subsequent move to Fort Meyers on the mainland, he made his home at Santa Monica, California. Dr. and Mrs. Lourie moved to Peoria, Illinois, in the summer of 1958 to live with their son, Lloyd S. Lourie, Jr., who practices dentistry in that city.

Dr. Lourie was a charter member of the American Society of Orthodontists (now the American Association of Orthodontists), and he was the last surviving member of that small group of pioneers of modern orthodontics. He served as president of this organization for two terms, in 1904 and 1905, and upon his retirement in 1938 he was made an honorary member. He was also a charter member and president of the Chicago Association of Orthodontists. In addition to being a member of Delta Sigma Delta fraternity, Dr. Lourie was a member of the Chicago Dental Society and the American Dental Association; he was an honorary member of the Northwestern University Dental Society and the University of Iowa School of Dentistry Alumni Society.

At the first meeting of the American Society of Orthodontists in 1901, he read a paper entitled "Is Orthodontia Represented by Its Techniques?" This was published in *Dental Items of Interest* in 1901. Later, Dr. Lourie presented eleven other papers which were published in dental journals: "Distal Movements of Molars and Bicuspids," "The Necessity for Early Treatment,"

"Compromise Treatment," "The Ligature Jack," "The Concealed Labial Arch Wire With Spring Extensions," "Some Simplified and Efficient Appliances," "Some Abnormal Functions Associated With Malocclusions," "Case Report," "The High Labial Arch," "Trimming Deciduous Teeth to Aid Normal Eruption of Permanent Teeth, or Assist in Correction of Malocclusion," and "Some Forms of Spring Extension for High Labial Arch."

Whether correcting malocclusions or collecting shells on a Florida beach, Dr. Lourie was a perfectionist, completely absorbed with the immediate situation. He had a profound influence on orthodontics during its formative years.



Photograph of Lloyd S. Lourie taken about 1906.

Techniques in the earlier days were not as formalized as they are today, and each orthodontic operator had to experiment by himself. Consequently, during the early part of the century there were sharp differences of opinion as to techniques. Dr. Lourie excelled in the critical analysis of papers regarding techniques. Forty-five such discussions are published in our journals. Fellow orthodontists benefited from these discussions, as his analyses were always

sincere and to the point. It is unfortunate that our present-day meetings have become so large and so filled with essayists that there is no time for critical evaluations of this nature.

Dr. Lourie had a very practical mind and was particularly gifted in case analysis. Although he appreciated at all times the importance of the biologic, histologic, and hereditary aspects of an orthodontic case, his primary concern was the treatment of the case at hand. Because of this analytical skill, he was able to correct malocclusions with a minimum of effort.

He gave many valuable clinics and demonstrations at orthodontic meetings. Dr. Lourie was one of the first operators to use a lingual arch mechanism. He originated the high labial arch appliance, and he invented a wire-stretching plier which came into moderately popular use and an instrument for cutting spurs on labial arches which would hold wire ligatures in the desired position with no slippage.

In October, 1958, Dr. Lourie suffered a slight cerebral hemorrhage but temporarily recovered. Later he had a more severe attack and was placed in a Peoria hospital. He died on March 12, 1959, a few months after his eighty-first birthday.

Surviving are his widow, Caroline Lourie; a son, Dr. Lloyd S. Lourie, Jr.; a daughter, Mrs. Elmer Ryckart; five grandchildren; a sister, Mrs. Sydney Rogers; and a brother, Herbert Lourie.

He was admired and respected by his colleagues. His influence and presence will be missed.

Ralph G. Bengston.

Editorials

REVISED RESOLUTIONS OF THE COUNCIL ON DENTAL EDUCATION

FAVORABLE changes in its resolutions are recommended by the Council on Dental Education of the American Dental Association in a revision of its annual report to the Board of Trustees and the House of Delegates of the A. D. A. The revision is based in great part on the suggestions and recommendations of the specialty representatives who attended the Council's Conference on Dental Specialties in Chicago on July 9 and 10, 1959. A list of the original regulations that were contrary to current policies of the American Association of Orthodontists and the American Board of Orthodontics was published in the August, 1959, issue of the *AMERICAN JOURNAL OF ORTHODONTICS*.

The principal change that affects orthodontics is an extension to ten years for the acceptance of preceptor-trained men for examination and certification by the American Board of Orthodontics. The original regulation specified Jan. 1, 1965, for the termination of preceptor training programs for A.B.O. applicants. Since current A.A.O. preceptor programs cover three years, the latest effective date for starting such training would have been Jan. 1, 1962. Under the new resolutions, the final date is Jan. 1, 1967. This means that the American Board of Orthodontics can continue to accept applications for examination of preceptor-trained orthodontists up to Jan. 1, 1970, but not thereafter.

The revised regulation to be submitted to the House of Delegates reads as follows:

Each board shall require for eligibility for certification as a diplomate a minimum of two academic years of postgraduate study in recognized institutions, or two calendar years of postgraduate study if the programs involve hospital training. Until Jan. 1, 1967, candidates entering the preceptorship program operated by the American Association of Orthodontists may have the study and training of such programs accepted as a substitute for a formal education program.

The objectionable term *surveillance* has been replaced by *review*, and the boards have been given greater autonomy, depending on their need and organization, in its application:

Each board shall conduct periodic reviews to provide assurance that its diplomates continue to meet the qualification standards of the board and shall report the results of such reviews to the Council on Dental Education.

Each board shall provide periodically to the Council on Dental Education evidence of its promotion of effective continuing educational programs in its area or evidence that this activity is being effectively conducted by other agencies or institutions.

Each board shall grant a certificate annually to each of its diplomates as evidence of fulfillment of all qualifications and requirements.

Each board shall require an annual registration fee from each of its diplomates intended to assist in supporting financially the continued program of the board.

The Council is to be commended for its prompt attention on the recommendations of the various delegates at the conference. An effective defense of current orthodontic policies was conducted under the direction of George M. Anderson, president of the American Association of Orthodontists. The American Board of Orthodontics was represented by Frank P. Bowyer and B. F. Dewel. Other orthodontic delegates were Edward J. Forrest, Robert E. Moyers, and Boyd W. Tarpley, of the A.A.O. Education Committee.

The Council's new regulations consider the problem of specialties under four principal headings: area of practice, organization of boards, operation of boards, and certification requirements. Basic policy for establishing a special area of dental practice is provided in this regulation:

The area shall represent a substantial field of practice which calls for special knowledge and skills requiring intensive study and extended clinical and laboratory experience beyond the accepted undergraduate training in order to perform services of an unusual or difficult nature.

Other requirements for special areas of practice are defined as those that have sufficient graduate courses and an adequate number of full-time practitioners for consultation and reference, areas which can demonstrate a public demand and need for special services, and those that have developed significant contributions to the literature of the specialty under consideration. There is no question but that orthodontics as a specialty fulfills all these qualifications.

Nor is there any question about the organization and operation of the American Board of Orthodontics. Its origin as the first board in dentistry, under the auspices and control of the American Association of Orthodontists, is fully recognized by the Council. The A.B.O. already complies with most of the requirements under the new regulations: certification of qualified applicants, frequency of examinations, elimination of waivers, annual listing of diplomates, and annual reports to the Council. It has not been the practice of the A.B.O., however, to issue annual certificates and collect annual registration fees or to "provide periodic assurance to the Council that its diplomates continue to meet its qualifications." This creates problems in administration that are not fully spelled out in the new resolutions. At this stage it appears to be impractical and virtually unenforceable.

Other areas have provided problems as great as those of orthodontics. Part-time specialization is one. "Fragmentation" in dental practice is another. Basic policy statements illustrate the Council's attitude on these problems:

Specialization, by nature and definition, demands full time or exclusive attention from the specialist.

In general, the division of the practice of dentistry into special areas depends more upon a logical separation of services into those which have distinct biological, psychological, and physiological approaches to diagnosis or treatment, involving knowledge and skills beyond those which are normally used in general practice, than on a fragmentation of services based upon techniques or procedures.

The Council's responsibilities are not concluded with these 1959 resolutions; unfinished business delegated to it by the Board of Trustees and the House of Delegates concerns a 1958 resolution that "the Council be requested to present a restatement of the (present) grouping of specialties and of the potential specialty groups in the practice of dentistry." A conference for this purpose will be held early in 1960, at which time the Council will again consult the various specialty groups in an effort to arrive at the correct solution.

The next hearing on the present resolutions will be held before the Reference Committee of the House of Delegates in New York on Sept. 15, 1959. Orthodontics will be represented by the same group of delegates that attended the July conference in Chicago.

B. F. D.

BANDS ON BOVINE TEETH

WHEN the Colorado State Dental Association met at the Antlers Hotel in Colorado Springs in 1908, long before World War I, discussion was launched on a subject that has never been entirely reconciled from that day to this. That subject, which made bigger headlines and more of them than any topic that has ever emerged from the dental profession, was introduced by Dr. Frederick S. McKay, an orthodontist. The meeting was attended by some of the biggest names in dentistry, including the famed G. V. Black of Chicago, Illinois.

The subject discussed was the brown stain or so-called "Colorado stain" so frequently found on the teeth of children born and reared in the Colorado area. The meeting started a discussion that in about fifty years led to the controversy over the effect of fluorides on the growth of children's teeth.

The original move which Dr. McKay started in Colorado Springs was viewed with raised eyebrows by many of his contemporaries, and so far the presence of fluorine in the drinking water has been responsible for more contention than any single health subject ever introduced by a dentist.

Now still another front-page story comes out of Colorado, and its source is not far from where the fluorine furor started. This story concerns the prevention of abrasion of enamel and dentine of the teeth in beef cattle and what one dentist has done about it. Dr. Ward Newcomb, a Nebraska dentist, was recently successful in crowning the abraded lower front teeth of some valuable eastern Colorado beef cattle. It seems that Mr. Rood Menter, a rancher in Colorado, is convinced that putting metal crowns on the eight front teeth of cows will add somewhere between three and eight years to the lives of cattle and will pay off in extra calves produced during those years.

Dr. Newcomb makes the point that it is hoped that this project will help to increase the edible protein now so dangerously low in some quarters of the country. It was further disclosed that the bands which Dr. Newcomb used were made of a special hard stainless steel and that they were actually crimped and cemented onto the teeth with hard cement so that they would stay on for several years. It is understandable that orthodontists who spend their lives banding the teeth of human patients (but for very different reasons) will be interested in the ultimate outcome of the experiment in bovine orthodontics.



Fig. 1.—Eastern Colorado beef cow wearing stainless steel crowns on her lower front teeth to prevent further abrasion of the enamel and dentine.

If you read the "False Teeth for Cows" article, you no doubt considered it incredible. If you started to reflect, however, you would remember that all the talk about brown stain on children's teeth being a result of excess fluorine in the drinking water near the Pikes Peak area of Colorado was also taken with a grain of salt about fifty years ago.

Correspondence with Dr. Newcomb definitely reveals that the story is all quite true and logical. It seems that there are tremendous amounts of silicate and sand on the wind-swept, dry prairie area where Dr. Newcomb made his experiment and that this combination of environmental factors tends to abrade the enamel and dentine of the occlusal surfaces of the teeth of any herbivorous animal at a rather early age. Dr. Newcomb decided to replace this abraded enamel with hard stainless steel crowns and attempt to prolong

the life and usefulness of fine cattle for a few years. This end obviously has been successfully achieved, at least with some valuable high-bred cattle, and the purpose has been fully explained.

The experiment will be watched with a great deal of interest by all specialists and dentists who fit bands on human teeth. We have learned much about bands cemented to teeth, and this is new.

No one will gainsay that it cannot be done unless the doctor claims to have banded the upper teeth as well and to have brought about an end-to-end bite in order that the animal may nip off grass much as wire-cutters nip off a wire. In that case, orthodontists undoubtedly will rise as one and say, "This I gotta see."

Dr. Newcomb is now demonstrating his technique before various organizations of veterinarians. This must mean that orthodontics is expanding its area of service.

H. C. P.

THE SECOND WORKSHOP ON ROENTGENOGRAPHIC CEPHALOMETRICS

ON PAGE 716 of this issue of the JOURNAL there is an account of the Second Research Workshop on Roentgenographic Cephalometrics. A detailed report on the transactions of the Workshop, which was authorized and supported by the American Association of Orthodontists and by a grant (D-909) from the National Institutes of Dental Health of the United States Public Health Service, is now in the process of preparation and will be made available for distribution to orthodontists, educational institutions, government health and education agencies, and others. At this time we wish to comment in general on the aims and general procedures of the Workshop.

The Workshop was divided into three groups as follows:

Group 1: A. The relative merits and changes of the different components of the roentgenographic cephalometric analyses that were synthesized at the First Cephalometric Workshop, held in 1957, and other published data. This includes landmarks, lines, planes, and angles with respect to skeletal, profile, and denture sections of the skull.

B. The workability and applicability of "norms" and standards that have been evolved by various workers in the field of roentgenographic cephalometrics.

Group 2: The various methods of superimposing serial lateral and frontal cephalometric tracings in an attempt to understand better the growth and developmental changes of the various areas of the craniofacial complex.

Group 3: A. Equipment and technical requirements for research on human beings, animal experimentation, and clinical roentgenographic cephalometrics.

B. Adaptation of roentgenographic cephalometric study to research in other fields of dentistry, medicine, and special education.

Chairman J. A. Salzmann, in presenting the keynote of the Workshop, stated: "Our purpose is to organize what we know, or at least what we think we know, along basic lines so that we have some common ground for a point of departure. We should make the attempt to eliminate mutually exclusive conclusions by giving heed to accepted facts in physical anthropology, anatomy, physiology, and the basic knowledge of skull growth. This Workshop is not being held for the purpose of telling anyone what he *must* do, or what he *may* not do. We are not trying to determine *who* is right but rather *what* is right."

The following observation by Dr. Stanley M. Garn, from the Study of Human Development, The Fels Research Institute, who served as a special consultant to the Workshop, helped to delimit the scope of at least one phase of the Workshop: "In the growing organism, there is no such thing as a 'fixed point' except that the origin for a given measurement is arbitrarily defined as zero. While there may be less change in structures nearer the base of the brain, and while these structures may be useful for measuring the movement of other points, they *do* also change."

The foregoing should give concern to practicing orthodontists who speak of cephalometric analyses in categoric terms. Nevertheless, as the full report on the Workshop will show, the use of cephalometrics is bound to remain and increase in importance as an orthodontic diagnostic and research tool.

As far as the existing differences of opinion are concerned, we should keep in mind that progress in science is not the result of unilinear thinking but is due to the hunches, theories, and prejudices of scientists. Science owes a great debt to the conflicts which have always existed among the workers in the field. We feel that the serious and devoted application of the participants of the Workshop which resulted in a classification, evaluation, and definition of known practices, as well as directions for future avenues of research in cephalometrics, will prove of benefit not only to present practitioners of orthodontics but also to those who will practice in the years to come.

J. A. S.

Reports

REPORT OF THE AD INTERIM COMMITTEE, AMERICAN ASSOCIATION OF ORTHODONTISTS

THE ad interim business of the American Association of Orthodontists reached into many facets of activity concerning the organization. The subjects covered and the disposal of each are herein presented.

1. *Necrology Committee*

Because of a lack of uniformity with which the passing of members is recognized, suggestions are made:

- (a) That a floral piece costing \$15.00 to \$20.00 be wired to each funeral.
- (b) That the Necrology Committee of A.A.O. be enlarged to include a member from each constituent society, with suitable changes being made in the By-Laws to provide for this.
- (c) That all responsibility for carrying out the routine of sending the floral piece be in the hands of the particular constituent member of the Committee.
- (d) That the Necrology Committee be asked to submit a budget annually.

2. *Membership List*

The matter of requests from organizations for lists of our membership was considered. It was decided that legitimate requests should be answered by referring them to the *Orthodontic Directory of the World*.

3. *The John V. Mershon Memorial Lecture*

The Committee was consulted to determine if it possessed the authority to accept a gift of \$20,000.00 from Mrs. Mershon. It was decided that the gift could be accepted by the Committee for the A.A.O. The skeletal arrangements for setting up the use and management was discussed, and the gift was consummated immediately prior to the death of Mrs. Mershon.

4. *Establishment of the Non-Tax Status of the American Association of Orthodontists*

In order to finalize the arrangements for the Mershon gift, it became necessary to prove the non-tax status of the organization. It was discovered that the Government had no record of this status as recorded March 19, 1942, and it also became apparent that the wrong category had been applied for originally.

The services of a certified public accountant have been secured, and arrangements are now under way to establish the category.

5. *Group Insurance*

The A.A.O. was approached on the matter of group insurance for its members.

The original correspondence came from Dr. David C. Hamilton of New Castle, Pennsylvania. He is well informed on this subject and was invited to present it on the agenda of the Board of Directors meeting.

6. *Joint Committee of Orthodontists and Pediatricians*

The Ad Interim Committee was consulted on the proposition of forming a joint committee of orthodontists and pediatricians. The purpose stated was to study our mutual problems. This was supported by requests from our own members as well as from the American Academy of Pediatrics. Your Committee approves, generally, of the idea and asks for an expression from the Board of Directors as to preparing for such a conference.

7. *Conference of A.S.D.C. and A.A.O.*

There has been considerable correspondence regarding a conference between the American Society of Dentistry for Children and the American Association of Orthodontists. The Committee was in favor of such a conference and asks for a discussion by the Board of Directors to define objectives and policy with a view to consummation of a meeting.

8. *Meeting of the Department of Health, Education, and Welfare*

An invitation was received from the Department of Health, Education, and Welfare of the United States to participate in a meeting in Washington, D. C. It was the opinion of the Committee that the president be sent to participate. This was accomplished.

9. *Administrative and/or Executive Secretary*

The matter of securing a secretary of administrative or executive status (or both) was discussed by the Committee. In order to pursue the details properly and to bring out the need of such a secretary, the president appointed Wm. S. Brandhorst who will report to the Board of Directors.

10. *Roentgenographic Cephalometric Workshop*

The subject of procuring reprints of the proceedings of the first Roentgenographic Cephalometric Workshop was discussed with the following conclusion:

One thousand reprints were purchased from the publisher and are housed by the secretary-treasurer. Notice has been published in the AMERICAN JOURNAL OF ORTHODONTICS to the effect that the reprints are available to the membership for the asking.

11. *1960 Administration*

Two subjects were referred to the Committee regarding the 1960 session, which were requests to pass on (a) the proposed international flavor for the

meeting in Washington, D. C., and (b) an increase in the budget of the Program Committee for 1960.

It was the decision of the Ad Interim Committee that it was proper for it to favor the international flavor for the 1960 session, but that it did not think it had the power to pass on the matter of budget, that being the prerogative of the Board of Directors at the 1959 session of the A.A.O.

12. *Public Relations*

The Committee was consulted with regard to expansion in the field of public relations. It was the consensus of opinion that our public relations efforts should be broadened. However, it was felt that while ultimately we should have year-round public relations, we should, for the present, concern ourselves only with hiring public relations experts for spot jobs at the time of the annual sessions.

13. *Survey on Orthodontic Education*

The Committee was consulted on this subject, with mixed opinions being expressed.

In general, it was felt that the A.A.O. should cooperate with the A.D.A., although one consultant felt that it could better be done by the A.A.O. independently.

The factor of pointing the survey on orthodontic education to make a particular study on the advisability of teaching one appliance therapy as opposed to several was discussed with great interest.

In general, the majority were in favor of regarding the number of appliances being taught in the university as being the particular concern of that institution, provided a well-rounded orthodontic knowledge be disseminated, free from intolerance.

Respectfully submitted,

C. EDWARD MARTINEK
GEORGE M. ANDERSON
ERNEST N. BACH
HERBERT V. MUCHNIC
EARL E. SHEPARD, Secretary

REPORT OF THE SPECIAL COMMITTEE ON ROENTGENOGRAPHIC CEPHALOMETRICS, AMERICAN ASSOCIATION OF ORTHODONTISTS

IN COMPLIANCE with the authorization of the American Association of Orthodontists at the annual meeting in New York City in 1958, the Special Committee on Roentgenographic Cephalometrics has scheduled a Research Workshop on Roentgenographic Cephalometrics to be held at the Bolton Fund Headquarters, Western Reserve University, Cleveland, Ohio, July 7, 8, and 9, 1959.

On the application of the Special Committee, a research grant in the amount of \$9,835.00 in support of the Research Workshop has been awarded to the American Association of Orthodontists. Due acknowledgment of the grant has been made to the National Institutes of Health by President Martinek and by the chairman of the Special Committee.

The Workshop will bring together investigators in cephalometries and allied areas in order to take inventory of our present state of knowledge and accumulated data and to propose future avenues for fruitful investigation. It is anticipated that the publication of these deliberations will intensify investigations, facilitate communication, and tend to standardize or at least make better known accepted techniques among orthodontists and research workers. It is intended to provide a critical appraisal of cephalometric research and technique. The Workshop will devote itself to the following:

1. A. The relative merits and changes of the different components of the Roentgenographic Cephalometric Analysis that were synthesized at the First Cephalometric Workshop, held in 1957, and other published data. This would include landmarks, lines, planes, and angles with respect to skeletal, profile, and denture sections of the skull.
B. The workability and applicability of "norms" and standards that have been evolved by various workers in the field of roentgenographic cephalometries.
2. The various methods of superimposing serial lateral and frontal cephalometric tracings in an attempt to increase understanding of growth and developmental changes in the field of roentgenographic cephalometries.
3. A. Equipment and technical requirements for research on human beings, animal experimentation, and clinical roentgenographic cephalometries.
B. Adaptation of roentgenographic cephalometric study to research in other fields of dentistry, medicine, and special education.

In addition, it is the intention of the second Workshop to delegate unsolved problems that remain after the completion of the formal meeting to selected participants for further research and study by graduate students, technicians, etc. in their parent institutions, laboratories, and other research facilities.

The Committee recommends:

1. That the Committee be continued to complete the Workshop and publication of results.
2. That the Board give formal thanks to the Bolton Fund, Western Reserve University, and Dr. B. Holly Broadbent for making the facilities of the Bolton Fund Headquarters available to the Workshop.
3. That the unexpended funds appropriated by the A.A.O. for use of the Special Committee be continued and increased by \$1,000.00 for expenditures not provided by the National Institutes of Health Grant, D-909.

4. That all requests for payment of bills from the National Institutes of Health Grant should be signed by the chairman of the Special Committee and one other member or consultant of the Committee and countersigned by the president of the American Association of Orthodontists before payment is made by the secretary-treasurer of the American Association of Orthodontists.

Respectfully submitted,

J. A. SALZMANN, Chairman

A. G. BRODIE

L. B. HIGLEY

ROBERT E. MOYERS

T. M. GRABER

Consultants:

B. HOLLY BROADBENT

WILLIAM B. DOWNS

W. M. KROGMAN

HERBERT I. MARGOLIS

WENDELL L. WYLIE

REPORT OF THE BUDGET COMMITTEE, AMERICAN ASSOCIATION OF ORTHODONTISTS

THE Budget Committee received requests from the program chairman of the 1960 meeting for \$4,500.00 and a request for \$4,800.00 from the Local Arrangements Committee. This amounts to an increase of \$1,500.00 for the Program Committee and an increase of \$800.00 for the Local Arrangements Committee, an over-all increase of \$2,300.00 for the 1960 meeting.

In view of the size of the increase requested, it is submitted to the Board for discussion and approval.

Respectfully submitted,

HERBERT V. MUCHNIC, Chairman

GEORGE H. SIERSMA

CECIL J. MULLER

In Memoriam

Z. BERNARD LLOYD
1915—1959

Z. BERNARD LLOYD, a devoted member of the Middle Atlantic Society of Orthodontists, died on May 22, 1959, at the age of 44.

Dr. Lloyd attended Georgetown University College of Arts and Sciences from 1932 to 1934 and received his Doctor of Dental Surgery degree from Georgetown University in 1938. He served a preceptorship in orthodontics in Washington, D. C.

In 1942 Dr. Lloyd was appointed instructor in the Department of Orthodontics at Georgetown University School of Dentistry, and in 1943 he was appointed professor and director of the department.

Dr. Lloyd was past president of the District of Columbia Dental Society and was active in the Dental Society from the time of his graduation in 1938. He was a member of its Executive Committee for many years and served as vice-president once and as its secretary twice. As chairman of the Society's postgraduate clinic, Dr. Lloyd was instrumental in reactivating the annual dental alumni reunion at Georgetown.

Dr. Lloyd lectured on orthodontics before groups across the country and at universities. He recently conducted a postgraduate course at the University of Tennessee School of Dentistry.

He was a clinical consultant at the National Institutes of Health, a diplomate of the American Board of Orthodontics, a Fellow of the American College of Dentists, and a member of the American Association of Orthodontists. He was chairman of the Local Arrangements Committee for the 1960 meeting of the A.A.O. He also was a member of Omicron Kappa Upsilon honorary dental society, Delta Sigma Delta, the Kiwanis International, Northeastern Society of Orthodontists, Washington-Baltimore Society of Orthodontists, and the Strang-Tweed Study Group #2 in New York. He was a member of Our Lady of Lourdes Church.

Dr. Lloyd is survived by his wife, Mrs. Catherine D. Lloyd, and five children—Mary T., Z. Bernard III, Catherine A., Andrew D., and Margaret F. He also leaves his father, Z. B. Lloyd, and a sister, Mrs. Wm. H. Devlin.

WHEREAS, Almighty God in his infinite wisdom has seen fit to take from our midst our friend and colleague Z. Bernard Lloyd,

WHEREAS, in his passing the Middle Atlantic Society of Orthodontists has lost a loyal member and an ardent worker,

WHEREAS, he has lent dignity and sincerity to the profession he loved,

BE IT RESOLVED that the Middle Atlantic Society of Orthodontists show by these resolutions our high esteem and tender affections for our departed member. May the principles and steadfastness of purpose of his life to which he gave expression remain ever fresh through the years and be an inspiration for us all, and

BE IT FURTHER RESOLVED that the Middle Atlantic Society of Orthodontists express its sincere sympathy to the bereaved family that this resolution be spread upon the minutes, and that a copy of this resolution be sent to the family.

Respectfully submitted,

Milton B. Asbell, Chairman
Necrology Committee

THURMOND COUNCEL SPARKS
1895—1958

THURMOND COUNCEL SPARKS died at his home on Lake Murray on Oct. 10, 1958. Never during his lingering illness did his sense of humor and his interest in others lag. He bore his suffering with fortitude and those many friends who visited him during his last two years came away inspired by his courage.

A native of Kinston, North Carolina, he was the son of James William and Lucy Hooten Sparks. In 1918 he was graduated from The Citadel with a B.S. degree in civil engineering. He was immediately commissioned a second lieutenant of infantry and served for the duration of World War I. He graduated from Emory University, School of Dentistry, with the Class of 1923 and served as a clinician with the Dental Division, South Carolina State Board of Health, until 1926, when he entered private practice at Greer. In 1928 he was graduated from the Dewey School of Orthodontia and located in Columbia, where he limited his practice to orthodontics until illness forced his retirement. In 1938 he took further courses in orthodontics at Harvard University and Columbia University. In 1944 he served as secretary of the Southern Society of Orthodontists. In addition to his having held every office in his local association, he was for many years secretary of the South Carolina Board of Dental Examiners. He was a member of Delta Sigma Delta dental fraternity and Washington Street Methodist Church.

Thurmond Sparks possessed an attractive personality, a happy blending of a tolerant and gentle nature with clear judgment and courage in times calling for a stand on matters concerning his profession and citizenship. It is probably true that no man in his profession has given more freely of his time and energy over so long a period of time.

Dr. Sparks is survived by his widow, Mrs. Frances Moore Sparks, and a brother, J. B. Sparks.

ARCHIE B. BRUSSE
1888-1959

ARCHIE B. BRUSSE of Denver, Colorado, died on May 31, 1959. Dr. Brusse was well known throughout American orthodontic circles. His intimates called him "Arch," and he was very active in the American Association of Orthodontists.

He was one of six sons of John and Jessie Elliott Brusse. The Brusses were a pioneer family who came to Colorado by covered wagon in 1865, Dr. Brusse's father having originally migrated from England to America.



ARCHIE B. BRUSSE

Dr. Brusse was educated in Denver and graduated from Denver University Dental School in 1912. He practiced general dentistry for several years. Then he decided on orthodontics as a specialty and took his first training under Dr. Albert H. Ketcham, pioneer orthodontist of Denver.

In 1918 he married Miss Dana Martin. Many members of the specialty organizations and their wives know her for her hospitality and charming personality.

Dr. Brusse was one of the founders of the Rocky Mountain Society of Orthodontists in 1921 and was president of that organization in 1941. He was one of the founders of the Denver Summer Seminar, or the Denver Summer Meeting for the Advanced Study of Orthodontics. In 1946 he was president of the American Association of Orthodontists when the meeting was held in Colorado Springs, Colorado, and when anthropology was featured on the program.

Dr. Brusse was always interested in athletics. In 1909 he was nominated All Rocky Mountain Conference shortstop. He made the All Rocky Mountain Conference football team twice—once as end and once as quarterback. In 1908 he was captain and quarterback of Denver University's conference championship team that played the famous Carlisle Indians in a post-season game at the time when Jim Thorpe was the star and Pop Warner was the coach of the Indians. Arch Brusse was one of Denver's top amateur golfers and was golf champion of the Denver Country Club in 1930. He was an ardent fly fisherman and spent many hours casting the trout streams of the wide Rocky Mountain area.

He was a member of Delta Sigma Delta dental fraternity and Beta Theta Phi college fraternity. He was also a member of the Denver Club, the Denver Press Club, the Denver Country Club, and the Wigwam Fishing Club.

Surviving, in addition to his wife, are a son, Martin, of Denver; a daughter, Mrs. Cornelia Johnson, of Seattle; and one grandchild.

Another of the very active stalwarts of the early days of orthodontics has left the scene of action. Dr. Brusse was regarded as one of the best in the field of the creation of mechanical ways and means in orthodontics. Because of his constant application to this highly specialized phase of orthodontics his death means a great loss to the specialty. He will be remembered as an outstanding athlete who, in his early manhood, switched his interests into the field of dentistry and did a tremendous job in both dentistry and athletics.

R. KENT TONGUE, JR.
1919—1959

IT IS with deep regret that we report the death of a loyal member of the Middle Atlantic Society of Orthodontists, R. Kent Tongue, Jr., of Towson, Maryland. He died on June 11, 1959, at the age of 40.

Dr. Tongue attended the Baltimore College of Dental Surgery, and the Dental School, University of Maryland, receiving his D.D.S. degree in 1943. Following graduation, he completed his graduate training in orthodontics at the Faculty of Dental Surgery, University of Montreal, Canada, in 1947.

Dr. Tongue was a member of the Baltimore City Dental Society, the Maryland State Dental Society, and the American Dental Association. He was also an active member in the Washington-Baltimore Society of Orthodontists, the Middle Atlantic Society of Orthodontists, and the American Association of Orthodontists.

He served in the Naval Dental Corps during World War II, going on inactive duty in 1946 with the rank of Lieutenant Commander.

Dr. Tongue is survived by his wife, Mrs. Barbara Ruth Enlow Tongue, and a son, R. Kent Tongue III. He also leaves his father and mother, Mr. and Mrs. Raymond Kent Tongue.

WHEREAS, Almighty God in his infinite wisdom has seen fit to take from our midst our loyal friend and colleague, R. Kent Tongue, Jr.,

WHEREAS, in his passing the Middle Atlantic Society of Orthodontists has lost a loyal member and an ardent worker,

WHEREAS, in the short years of his life, he lent dignity to his profession and served faithfully the country of his birth,

BE IT RESOLVED that the Middle Atlantic Society of Orthodontists show by these resolutions our high esteem and tender affections for our departed member. May we recognize his fine character, his devotion to duty, and his service to his fellow men, and may these be an inspiration to us all.

BE IT FURTHER RESOLVED that the Middle Atlantic Society of Orthodontists express its sincere sympathy to the bereaved family of our departed friend, that this resolution be spread upon the minutes, and that a copy be sent to the family.

Respectfully submitted,

Milton B. Asbell, Chairman
Neerology Committee

Department of Orthodontic Abstracts and Reviews

Edited by

DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmänn, 654 Madison Avenue, New York City.

Abstracts of Papers Presented Before the Research Section of the American Association of Orthodontists, Detroit, Michigan, May 3 to 7, 1959

A Radiographic Cephalometric and Clinical Study of Certain Occlusal Mandibular Movements in Individuals With Temporomandibular Joint Dysfunction: By Isaac J. Post, Northwestern University, Chicago, Illinois.

The condylar, molar, and incisor paths as the mandible moved from occlusion to incision to protrusion as well as various other measurements on subjects with temporomandibular joint dysfunction (dysfunction group) were compared with similar data compiled on persons with excellent anatomic occlusion of the teeth and apparent normal function of the temporomandibular joints (normal group).

Selection of twenty-eight subjects was based on evidence of clicking, crepitus, or pain of the temporomandibular joints during the range of mandibular movement, without respect to occlusion. The Broadbent-Bolton cephalometer was utilized to obtain oriented lateral cephalometric radiographs in the occlusal, incisal, and protrusive positions. With the aid of a mandibular template, a master tracing of the three positions was made.

The following conclusions were drawn:

1. The results indicate that some differences exist between the normal and dysfunction groups. Whether these differences are directly related to the temporomandibular joint disturbance or are merely a reflection of malocclusion cannot be stated in this work. The results tend to substantiate the fact that malocclusion is a predisposing factor to temporomandibular joint problems.

2. Anatomic and physiologic normal occlusion must be distinguished. While the anatomic occlusion was satisfactory in twelve of the subjects, physiologic occlusion was unsatisfactory in the entire dysfunction group, as evidenced by functional interferences.

3. No significant differences were found between groups when the condylar, molar, and incisor path inclinations were compared as the mandible moved from the occlusal position to the incisal position.

4. The total linear change of the condylar, molar, and incisor paths as the mandible was moved from occlusion to incision is significantly larger ($P < 0.01$) in the dysfunction group. This was probably due to two factors:

- (A) There was a tendency toward a deeper overbite and overjet in the dysfunction group.

- (B) Several of the subjects in the dysfunction group presented with probable posterosuperior mandibular displacements, resulting in a discrepancy between centric and occlusal positions.

5. In the dysfunction group the mandibular apical base was in a more posterior position, and the overbite and overjet were more pronounced.

6. As overbite and upright position of the maxillary incisors increased, the incisor path became steeper.

7. In the movement of the mandible from incision to occlusion, there was a tendency for the dysfunction group to display a combination of translation and rotation of the condyle as compared to almost purely translatory movement in the normal group.

118-11 84TH AVE.
KEW GARDENS, N. Y.

The Process of Eruption in Relation to Skeletal Morphology and the Development of Occlusion: Intra-Alveolar Tooth Movement and Clinical Eruption: By Margaret Elizabeth Hatton, Burlington Orthodontic Research Clinic, Faculty of Dentistry, University of Toronto, Toronto, Ontario, Canada.

The significance of the process of eruption in relation to the development of occlusion has received the attention of several investigators. In an earlier study the author was able to show that hereditary factors play an important part in governing the time taken for a tooth to reach its clinical eruptive stage. Now, at the Burlington Research Clinic, serial records of children who were seen for the first time when they were 3 and who are now 7 years of age provide an opportunity for observing not only the different developmental stages in the process of eruption but also changes in skeletal morphology which may or may not be associated with or even govern the positional changes of the teeth. This initial study, which forms but a single facet of the more expansive one of the relationship between skeletal morphology and the process of eruption, was aimed at clarifying certain characteristics of intra-alveolar eruption in relation to clinical eruption of the mandibular first permanent molars only.

Oblique cephalometric radiograms taken of the same group of white boys at 3, 4, 5, and 6 years of age provided a means of establishing not only the height of the mandibular first permanent molars above the inferior border of the mandible at 3 years (chronological age) but also morphologic changes in the position of these teeth as they moved toward clinical eruption. Dates of clinical eruption were derived from direct observation and from records kept by the parents. It was found that at 72 months of age 44 per cent of the teeth were clinically erupted. The erupted molars and those which were still unerupted at this age did not differ significantly from their position at the age of 36 months. The erupted teeth were significantly smaller than the unerupted ones, however, and the "erupted" had moved 10.9 mm. between the ages of 36 months and 72 months of age compared with 6.7 mm., the distance which the unerupted crowns had progressed. Movement of all the teeth between the ages of 36 and 48 months was found to be positively correlated with over-all movement between 36 and 72 months. Thus, it was possible to estimate when a tooth would be in intraoral eruption by determining the distance it had moved between the ages of 36 and 48 months.

439A BRANT ST.
BURLINGTON, ONTARIO.

A Radiographic Cephalometric Study of Certain Occlusal Mandibular Movements in Individuals Possessing Malocclusion of the Teeth (Class II, Division 1, Angle): By Arnold R. Cook, Northwestern University, Chicago, Illinois.

The purpose of this investigation was to study the approximate condylar path, the molar path, and the incisal path as the mandible is moved with the teeth in occlusal contact from the occlusal position to the incisive position and from the incisive position to the protrusive position in persons with Class II, Division 1 (Angle) malocclusion of the teeth but with apparent normal function of the temporomandibular joints. This group was compared with a previously evaluated group of normals (Dierkes, 1957) for the purpose of detecting functional differences.

Fifteen subjects between the ages of 9 years 6 months and 12 years 11 months (mean age, 11.2 years) were selected. All could execute smooth mandibular movements, and none had any objective or subjective symptoms of abnormal joint function, such as crepitus or clicking, pain, tiredness, tenderness, or strain.

The data were obtained by a functional cephalometric technique. The subjects were positioned in the Broadbent-Bolton cephalometer and lateral cephalometric radiographs were taken, recording the following positions: occlusion, incision, protrusion, and open mouth. Composite master tracings of the contact positions of the mandible were made and measured for each subject by means of a mandibular template constructed from the open-mouth and/or the protrusive radiograph of the series.

The results were analyzed statistically and also compared with the normal group by means of the "t" ratio.

The following observations were noted:

1. The total range of mandibular movement was larger in the malocclusion group, the mean value from occlusion to incision being approximately three times greater than that of the normal group (Dierkes, 1957).

2. In the normal group the length of the path from incision to protrusion was greater than that from occlusion to incision, whereas in the Class II, Division 1 malocclusion group the range from occlusion to incision was appreciably greater than that from incision to protrusion, with eight of the subjects being unable to protrude the mandible beyond incision.

3. There was a significant difference (1 per cent level) between the Class II, Division 1 condylar, molar, and incisal path slopes, with the means of the normal but older group being from 13 to 16 degrees steeper.

4. In the normal group the condylar and incisal paths were found to be highly correlated. In the malocclusion group there was no significant correlation.

5. Measurements of both overbite and overjet showed a significant group difference at the 1 per cent level. The mean overjet was about five times larger in the malocclusion group, while the mean overbite was approximately two times larger than in the normal group.

6. The Class II, Division 1 group differed significantly from the normal group when a comparison of anthropometric and skeletal measurements was made, with the exception of the anteroposterior position of the maxilla (SNA) and the inclination of the upper incisors to the cranium (I-SN), which showed no significant difference. This agreed with Riedel's findings.

1805 LIVINGSTON ST.
BETHLEHEM, PA.

A Radiographic Cephalometric Study of the Facial Profile in Individuals With Complete Dental Prostheses: By Donald A. Apfel, Northwestern University, Chicago, Illinois.

The purpose of this investigation was to describe via radiographic cephalometry the skeletal and soft tissue profile of two groups of edentulous subjects for whom prosthetic care had been completed.

For this purpose, tracings of lateral cephalometric radiographs of thirty-eight white and sixteen Negro adults were made. Thirty-three angular and linear measurements of the skeletal, dental, and soft tissue profile were statistically evaluated for the mean, standard deviation, coefficient of variation, and coefficient of correlation. The "t" test was employed to determine differences between the means of the two groups and to compare eighteen of the measurements with means established by other investigators who studied dentulous persons.

The study revealed that the artificial denture teeth of the Negro group were in a more protrusive position than those of the white group, which was consistent with the findings of a more protrusive relationship of the maxillary ridge to the cranium for the former group.

The anteroposterior relationship of the mandible to the face was essentially the same for both groups.

The contour of the upper lip was more concave for the Negro group. Other soft tissue measurements, including lip thickness, were essentially the same for the two groups.

Comparison with previous studies showed that the maxillary artificial incisors were placed in essentially the same anteroposterior position as they are in adults with natural teeth. The anteroposterior position of the mandible to the face was also essentially the same.

The soft tissue profile of this group, when compared with previously established esthetic standards, was found to be more concave in total facial contour. The contours of the maxillary and mandibular lip sulci were found to be straighter.

635 ROGER WILLIAMS
HIGHLAND PARK, ILL.

Radiographic Method to Estimate the Mesiodistal Dimension of Unerupted Teeth: By Ralph L. Bull, Eastman Dental Dispensary, Rochester, New York.

The purpose of this research project was to develop and investigate a method of accurately determining the mesiodistal dimension of crowns of unerupted teeth from periapical radiographs. Thirty sets of radiographs, obtained in the mandibular deciduous molar and unerupted premolar areas, were evaluated. Two periapical radiographs were taken at two different target-film distances—8 inches and 16 inches. Angular relations of the cone to the film were maintained constant during both exposures. By means of fine pointed dividers, the erupted deciduous molars were measured directly from dental casts. The same method of measurement was used for all radiographs.

From the analysis, it was found that the radiograph taken at an 8 inch target-film distance indicated an average dimension that was 3.3 per cent greater than the direct measurement. The radiograph taken at the 16 inch target-film distance indicated an average dimension that was 2.3 per cent greater than the direct measurement.

A mathematical formula was developed for estimating the true mesiodistal dimension of teeth from two such sets of radiographs:

$$Y = \frac{d \times c}{(2d) - c}$$

Y = Estimated mesiodistal dimension of the tooth.

d = Measurement of the tooth on the radiograph taken at 8 inch target-film distance.

c = Measurement of the tooth on the radiograph taken at 16 inch target-film distance.

In comparing the mesiodistal dimension determined from the formula to the direct cast measurement, the formula figure was + 0.12 mm. greater. The average error was reduced to 1.4 per cent.

Complete evaluation of this method must be postponed until after eruption of the premolars, at which time new casts and measurements will be taken on the same persons.

A Radiographic Cephalometric Evaluation of the Various Methods of Scribing the Mandibular Line as Related to Alterations in Head Position: By Robert L. Edgerton, Northwestern University, Chicago, Illinois.

The need for a reliable line of reference to represent the slope of the body of the mandible in case diagnosis and in serial studies is great, and yet there is a lack of uniformity of opinion among orthodontists today as to how this mandibular line should be scribed. In some cases lateral cephalometric landmarks are utilized; in others only midline points are employed; and in still others a combination of the two is used.

The greatest source of variation or error in the mandibular line is improper head position, which is manifested by improper superimposition of right and left sides in the radiographic image. Especially with respect to lateral points, and even with midline points, disorientation of the head creates considerable error in these reference points and any lines which utilize them.

To evaluate the effect of rotation of the head upon the mandibular line, and to test a variety of methods of scribing this line in an attempt to demonstrate which method shows the least amount of resulting variation, fifteen skulls were radiographed in the proper oriented position in the cephalometer. Each skull was then rotated 3 mm. and 6 mm. in each of four perpendicular directions—anterior, posterior, superior, and inferior—and the radiographic results were evaluated for each of the eight positions of rotation.

Twelve methods of scribing the mandibular line were tested by the statistical analysis of variance and also by purely numerical evaluation of variation.

The results of this evaluation indicated that the method which consistently demonstrated the least amount of variation was that which utilized a midpoint bisecting right and left gonion posteriorly and cephalometric point menton anteriorly. This line, mid-Go-menton, is scribed from comparatively reliable cephalometric landmarks and well represents the slope of the body of the mandible.

509 S. HIGH ST.
OCALA, FLA.

News and Notes

American Association of Orthodontists

The American Association of Orthodontists will hold its next annual meeting at the Shoreham Hotel in Washington, D. C., April 24 to 28, 1960.

Washington, with its international relations, is an appropriate place for our Association to hold an international program. Five of our nine essayists will be from Europe, South America, and Australia. Others from abroad will be present as speakers at limited-attendance clinics. Our American essayists and clinicians are splendidly qualified to speak on American thought and practice.

More detailed information will follow in succeeding issues of the JOURNAL. Give thought now to plans to attend; you are being provided a rare opportunity.

T. M. GRABER, *General Chairman*

B. EDWIN ERIKSON, *Vice-Chairman*

PAUL REID, *Program Chairman*

PAUL HOFFMAN, *Local Arrangements Chairman*.

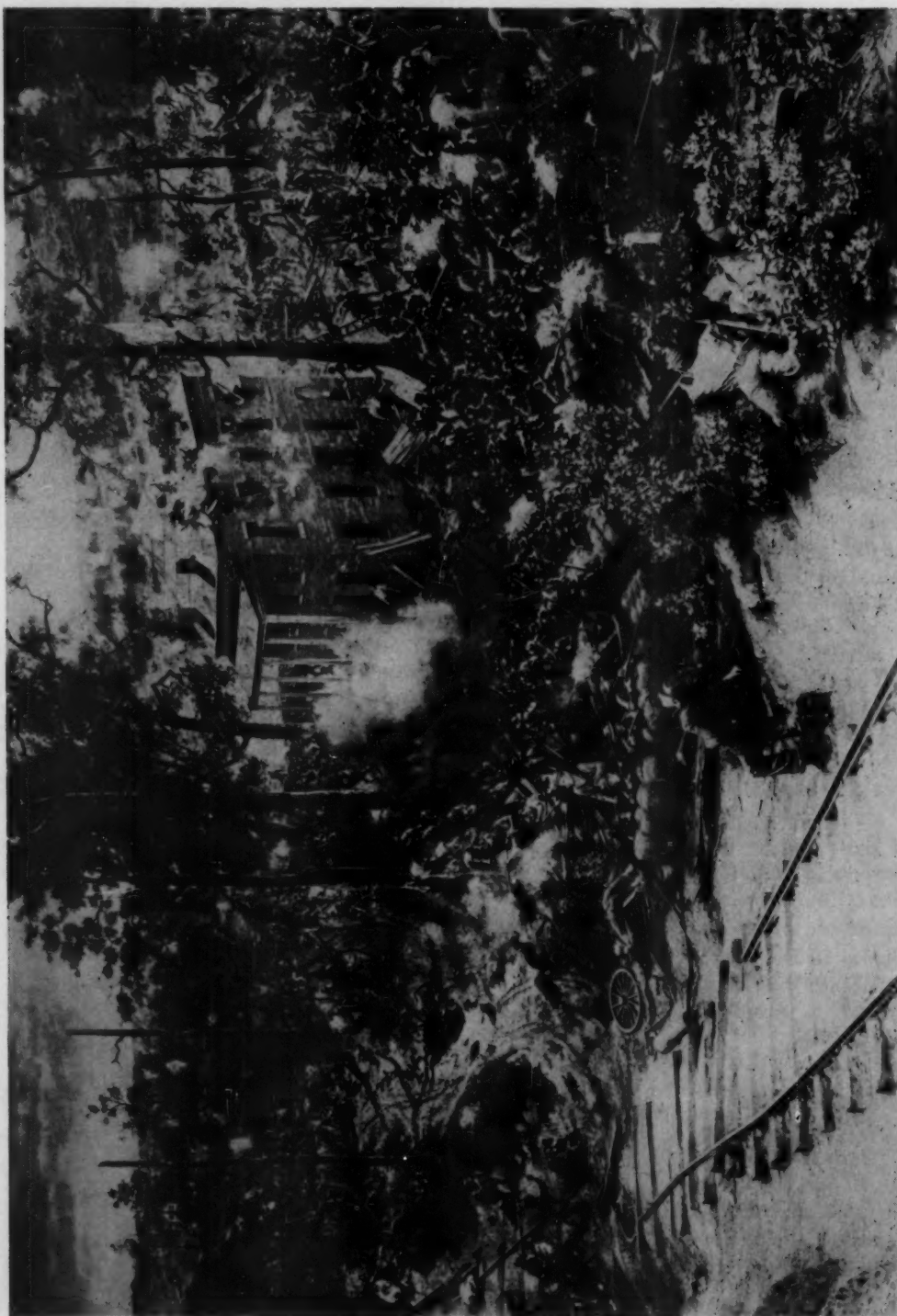
1960 Ketcham Awards

Recipients of the Albert H. Ketcham Memorial Awards in 1960 are to be Sheldon Friel of Dublin, Ireland, and Charles Tweed of Tucson, Arizona. Each year at the annual meeting of the American Association of Orthodontists one or two contributors to the field of orthodontics are so honored as a part of the official program. The selection is made by a committee consisting of the president-elect and the vice-president of the Association and three directors of the American Board of Orthodontics.

American Board of Orthodontics

The next meeting of the American Board of Orthodontics will be held at the Shoreham Hotel in Washington, D. C., Monday, April 18, through Saturday, April 23, 1960. Orthodontists who desire to be certified by the Board may obtain application blanks from the Secretary, Dr. Wendell L. Wylie, University of California School of Dentistry, The Medical Center, San Francisco 22, California.

Applications for acceptance at the Washington, D. C., meeting, leading to stipulation of examination requirements for the following year, must be filed before March 1, 1960. To be eligible, an applicant must have been an *active* member of the American Association of Orthodontists for at least two years.



Interior view of the Cyclorama, painting which depicts the fierce Battle of Atlanta fought on July 22, 1864. Authentic in every detail, the painting measures 50 feet in height by 400 feet in circumference. Models of soldiers, wagons, bushes, and railroad tracks placed in front of the painting create an illusion of continuing depth. The Southern Society of Orthodontists will meet in Atlanta, Oct. 11 to 14, 1959, at the Dinkler-Plaza Hotel.

Southern Society of Orthodontists

The Southern Society of Orthodontists will hold its thirty-eighth annual session at the Dinkler Plaza Hotel in Atlanta, Georgia, Oct. 11 to 14, 1959. The program follows:

Sunday Afternoon, October 11

Cocktail party.

Monday Morning

Opening Session Essays by Drs. George Anderson, President of the American Association of Orthodontists, and Tom Graber.

Monday Afternoon

Essays by Drs. Earl Shepard and Herbert D. Jaynes.

Monday Evening

Cocktail party.

Banquet.

Floor show.

Dancing.

Tuesday Morning

Second lecture by Dr. Earl Shepard.

Business session.

Tuesday Noon

Luncheon honoring new members.

Speaker: George Anderson.

Tuesday Afternoon

Table clinics.

Wednesday Morning

Economics. Speaker: Mr. Jules King.

Business session.

Adjournment.

Visiting members of the American Association of Orthodontists will be welcome.

LADIES' ACTIVITIES

Co-Chairmen: Kay Smith and Nancy Upshaw (All wives are committee members)

Monday Morning, 9:30 A.M.

"Welcome South Sisters Breakfast" at Dinkler Plaza.

Business meeting follows.

Tuesday, Noon

Luncheon, Flower and Fashion Show at Piedmont Driving Club.

Middle Atlantic Society of Orthodontists

The next meeting of the Middle Atlantic Society of Orthodontists will be held Oct. 4 to 6, 1959, at the Shoreham Hotel in Washington, D. C. Reservations may be made directly with the hotel.

Central Section of the American Association of Orthodontists

The Central Section of the American Association of Orthodontists will hold its twenty-second annual meeting Sept. 28 and 29, 1959, at the Sheraton Hotel in Chicago, Illinois. The following papers will be presented:

Malpractice Prophylaxis. Richard F. Rabe.

A Rational Approach to Open-Bite Therapy. J. William Adams.

Light Wire Technics. Joseph R. Jarabak.

A Concept of the Interdependence of the Parts of the Functional Unit—The Masticatory Organ. Frank M. Wentz.

Table clinics have been scheduled as follows:

Max R. Kadesky, Dubuque, Iowa: "Thumb and Tongue Habit Breaker" and "Distal Movement of Cuspids."

R. V. Winders, Milwaukee, Wisconsin: "Centric Relation and Orthodontic Treatment."

James J. Guerrero, Chicago, Illinois: "Models and Slides of Treated Cases."

Howard Yost, Grand Island, Nebraska: "Plaster Cast and X-ray Photography."

Russell A. Hering, Milwaukee, Wisconsin: "Serial Extraction."

William H. Olin, Iowa City, Iowa: "Orthodontics for the Cleft Palate Patient."

Table clinics will also be presented by Joseph R. Jarabak, Loyola University, Chicago, Illinois; Dr. Jackson, Northwestern University, Chicago, Illinois; J. William Adams, Indianapolis, Indiana; and E. H. Hixon, and the graduate students of the Orthodontic Department, State University of Iowa, Iowa City, Iowa.

The following men have served as officers of the Central Section during the past year:

President: John R. Thompson, Chicago, Illinois.

President-Elect: Leo B. Lundergan, St. Louis, Missouri.

Vice-President: Henry E. Colby, Minneapolis, Minnesota.

Secretary-Treasurer: William F. Ford, Winnetka, Illinois.

Representative to A.A.O. Board of Directors: Elmer F. Bay, Omaha, Nebraska.

Sectional Editor American Journal of Orthodontics: Charles R. Baker, Evanston, Ill.

Northeastern Society of Orthodontists

The next meeting of the Northeastern Society of Orthodontists will be held at the Hotel Statler in Hartford, Connecticut, on Monday and Tuesday, Oct. 26 and 27, 1959.

Rocky Mountain Society of Orthodontists

The Rocky Mountain Society of Orthodontists will hold its next annual meeting Sept. 13 to 16, 1959, in the Aspen Institute, at the famed ski resort, Aspen, Colorado.

The formal program will feature Drs. William L. Wilson of Boston, Massachusetts, and Cecil C. Steiner of Beverly Hills, California.

The meeting will be held under the direction of Dr. Howard L. Wilson, President, and Dr. E. H. Mullinax, Secretary, of the Rocky Mountain Society.

The Second Research Workshop on Roentgenographic Cephalometrics

This Workshop, which was authorized and supported by the American Association of Orthodontists, also had the support of a grant (D-909) from the National Institutes of Dental Health of the United States Public Health Service.

The Workshop was held July 7 to 9, 1959, inclusive, at the Bolton Fund Headquarters, Western Reserve University, Cleveland, Ohio. There were forty-three participants, including four special consultants. Among those present at the opening session were President John S. Millis of Western Reserve University; Charles B. Bolton; Dean Paul E. Boyle, School of Dentistry, Western Reserve University; and Samuel W. Chase, Head of the Department of Anatomy, Schools of Medicine and Dentistry, Western Reserve University, all of whom addressed the Workshop participants and bade them welcome. George M. Anderson, president of the American Association of Orthodontists, responded and thanked Western Reserve University, the Bolton Fund, and B. Holly Broadbent for providing their unequalled facilities for the Workshop. J. A. Salzmänn, Chairman of the Workshop, then introduced the foreign participants, who included Professor Edmondo Muzj of Rome, Italy, Professor Anders Lundström of Stockholm, Sweden; Professor Paul Herren of Bern, Switzerland; and Professor Oscar Hoffer of Milan, Italy. Canadian participants were Drs. R. M. Grainger and Frank Popovich.

In charge of the three groups into which the Workshop was divided were Alton W. Moore (moderator) and Sam Weinstein (reporter), Group I; T. M. Graber (moderator) and Raymond C. Thurow (reporter), Group II; and Robert E. Moyers (moderator) and Samuel Pruzansky (reporter), Group III. Special consultants to the Workshop were Stanley Garn, Fels Research Institute for the Study of Human Development, Antioch College, Yellow Springs, Ohio; Bertram Kraus, Department of Orthodontics, University of Washington, Seattle, Washington; R. M. Grainger, Chief, Dental Statistics and Research Section, Division of Medical Statistics, Department of Health, Parliament Buildings, Toronto, Ontario; and Melvin Moss, College of Physicians and Surgeons, New York, New York.

Consultants to Group I were B. Holly Broadbent, L. B. Higley, and W. M. Krogman. Group II had William B. Downs, Herbert I. Margolis, and Robert M. Ricketts. Consultants for Group III were Allan G. Brodie, Harold J. Noyes, and Frank Popovich.

Among the participants were J. William Adams, William S. Brandhorst, Charles J. Burstone, Egil Harvold, Ernest Hixon, John T. Lindquist, Coenraad F. A. Moorrees, Robert M. Nelson, Richard A. Riedel, Cecil C. Steiner, Jacob D. Subtelny, Faustin N. Weber, Ashley Howes, Arthur B. Lewis, Bhim Savara, Allen C. Brader, Bertram Kraus, B. Holly Broadbent, Jr., Arthur H. Craven, and Robert R. McGonagle.

J. A. Salzmänn, Chairman.

American Dental Association

CENTENNIAL MEETING TO HAVE INTERNATIONAL FLAVOR

Dentists, educators, government representatives, and other guests from more than thirty countries will travel to New York for the centennial session of the American Dental Association to be held Sept. 14-18, 1959. They will help swell attendance at the session to an estimated 25,000, making it the largest dental meeting ever held. Advance reservations indicate that there will be visitors from almost all European countries, as well as Australia, Burma, Egypt, Ghana, Hong Kong, India, Korea, and Venezuela.

The international flavor of the meeting will be heightened by the fact that the Fédération Dentaire Internationale is holding its forty-seventh annual meeting in conjunction with the A.D.A.'s centennial session.

Also attending the session will be representatives of at least eight allied health organizations. They include the American Hospital Association, the American Medical Association, the American Nurses Association, the American Pharmaceutical Association, the American Public Health Association, the American Public Welfare Association, the National Education Association, and the National Health Council. Invitations also have been extended to the American Bar Association and the American Osteopathic Association.

The A.D.A. will be headquartered at the Waldorf-Astoria, Biltmore, and Statler-Hilton Hotels, and the Fédération Dentaire Internationale will be at the Manhattan Hotel. The recently completed New York Coliseum will house the scientific program and commercial exhibits.

SCIENTIFIC PROGRAM

An "unusually comprehensive" scientific program has been promised by Dr. David J. Fitzgibbon, Washington, D. C., chairman of the A.D.A. Council on Scientific Session. There will be forums on efficiency in practice, handicapped patients, caries control, endodontics, periodontics, and complete and partial prosthodontics. Other topics scheduled are oral cancer, high-speed equipment, restorative dentistry, and fluoridation. Closed-circuit color television will be used in two parts of the scientific session. Programs of television clinics will originate from New York University College of Dentistry under the sponsorship of Ciba Pharmaceutical Products, Inc., and from Walter Reed Army Medical Center, Bethesda, Maryland.

Dr. William A. Fennelly, New York, general chairman of the Committee on Local Arrangements, reports that excellent housing still is available. Application for accommodations should be made through forms appearing monthly in the A.D.A. *Journal*.

NOTED GUESTS TO SPEAK AT CENTENNIAL SESSION

Vice-President Richard M. Nixon will head the list of national and international figures appearing in connection with the centennial session of the American Dental Association.

Mr. Nixon has agreed to speak during a general meeting of the session on Tuesday, September 15, in the grand ballroom of the Waldorf-Astoria Hotel.

Other dignitaries on the over-all program are as follows:

Dr. Jacob Malik, president of the United Nations, who will speak during opening ceremonies of the session on Monday morning, September 14, in the Waldorf's grand ballroom.

Dr. Leroy E. Burney, surgeon general of the United States Public Health Service, who will be principal speaker at the National Health Luncheon set for noon Tuesday, September 15, in the Waldorf's Empire Room.

Sir H. Leslie Munro, past president of the United Nations, who is to give the principal address at the International Health Luncheon being held at 12:30 P.M. Wednesday, September 16, in the Waldorf's Empire Room.

Former President Herbert Hoover, who will discuss "Responsibilities in Citizenship" during the afternoon phase of the American College of Dentists' program on Sunday, September 13, in the grand ballroom of the Waldorf.

Others invited to participate are Senator Frank Carlson, Kansas; Arthur S. Flemming, Secretary of Health, Education and Welfare; Senators Jacob K. Javits and Kenneth B. Keating of New York; Governor Nelson A. Rockefeller of New York; Arthur E. Summerfield, Postmaster General of the United States; and Mayor Robert F. Wagner of New York City.

World Orthodontic Literature Index

Volume 3 (1956) of the *World Orthodontic Literature Index* is now available. This 110-page volume, which was compiled and published by Alberto J. Cervera and A. Oeste Valencia, consists of both a subject index and an author index. A complete list of authors in the back of the book enables the reader to determine quickly where the various manuscripts were published, the dates of their publication, and the country in which they were printed.

According to the authors, the aims of the *Index* are (1) to provide information about all the articles concerning orthodontics that have been published all over the world each

year; (2) to show how they are classified by subjects, published by a particular author in several languages; (3) to make possible easy checking of the articles published by a determined author every year; (4) to simplify the consultations for literature; (5) to give a reference list of the magazines where orthodontic works have been published, with their addresses; (6) to make, on a classified languages list, a digest of the books that have been published on orthodontics.

Group Dental Care Plan

Dr. Percy T. Phillips, president of the American Dental Association, has announced that a comprehensive group dental care plan, said by its formulators to be the first of its kind, has gone into effect for employees of Dentists' Supply Company of York, Pennsylvania, and their dependents. More than 3,500 persons will be covered by the experimental insurance program which was developed with the cooperation of the American Dental Association.

Lenox Hill Hospital

Two meetings of the orthodontic staff of Lenox Hill Hospital have been scheduled:

Thursday, Oct. 8, 1959. Lester Cahn will discuss "Those Bone Lesions Occurring in an Age Group That Come Under the Supervision of the Orthodontist."

Thursday, Feb. 11, 1960. Justin Traub will give an illustrated talk on "Estate Planning for the Professional Man."

Both meetings will be held at 8:15 P.M. in the Doctor's Lecture Hall.

Notes of Interest

Patrick Alessandra, D.D.S., announces the opening of his offices for the practice of orthodontics at 4713 Richmond Ave., Houston, Texas, and 1919 Avenue H, Rosenberg, Texas.

Dr. Howard L. Apley announces the removal of his Amityville office to 102 S. Wellwood Ave., Lindenhurst, New York, practice limited to orthodontics.

Dr. Harry Cimring of 240 South La Cienega Blvd., Beverly Hills, California, announces that Dr. Raymond Weinshenker is no longer associated with him in the practice of orthodontics.

Edward B. Cook, D.D.S., M.Sc.D., 403 West Broad St., Bethlehem, Pennsylvania, announces the association of Arnold R. Cook, D.D.S., M.S.D., in the practice of orthodontics.

Thomas J. Kelley, D.D.S., M.S., announces the removal of his office from 98 Suffolk St. to 170 Oak St., Holyoke, Massachusetts, practice limited to orthodontics.

John H. McNutt, D.D.S., announces the removal of his offices to No. 7 Medical and Dental Center, 706 West 19th St., Austin, Texas, practice limited to orthodontics.

George D. Ritchie, D.D.S., announces the opening of his office for the practice of orthodontics in the Brook Medical Center, 702 Brook St., Wichita Falls, Texas.

Joseph L. Rubenstein, D.D.S., announces the removal of his Fair Lawn office to 3-01 Morlot Ave., Fair Lawn, New Jersey, practice limited to orthodontics.

Robert F. Uible, D.D.S., announces the opening of his office at 1542 Atlantic Blvd., Jacksonville, Florida, practice limited to orthodontics.

Charles J. Vosmik, D.D.S., announces that Charles G. Vosmik, D.D.S., will hereafter be associated with him in the practice of orthodontics, 1338 Keith Bldg., Cleveland, Ohio.

Dr. Morton J. Weyler announces the opening of his office for the practice of orthodontics at 64 Trumbull St., New Haven, Connecticut.

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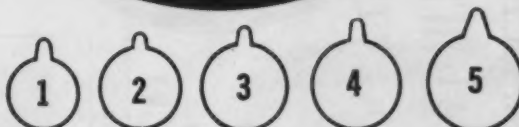
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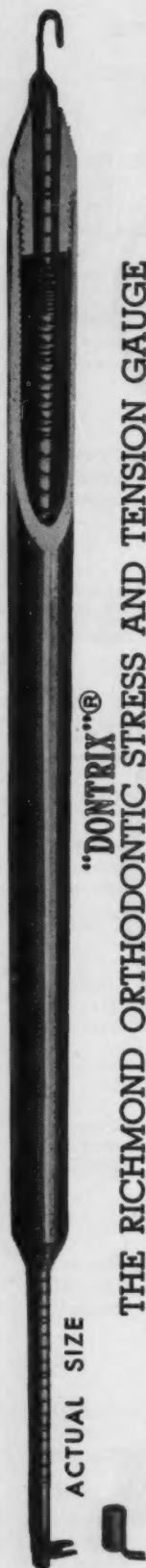
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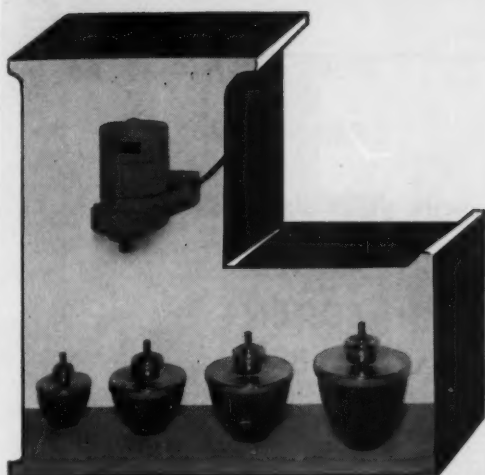
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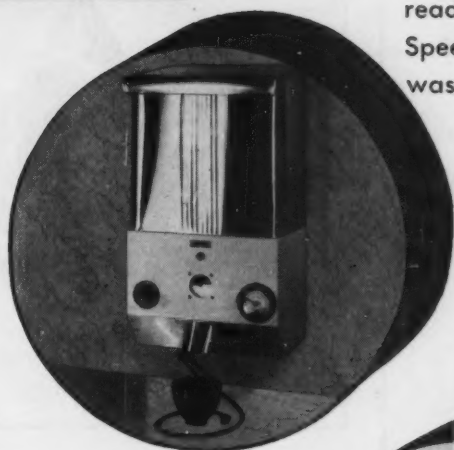


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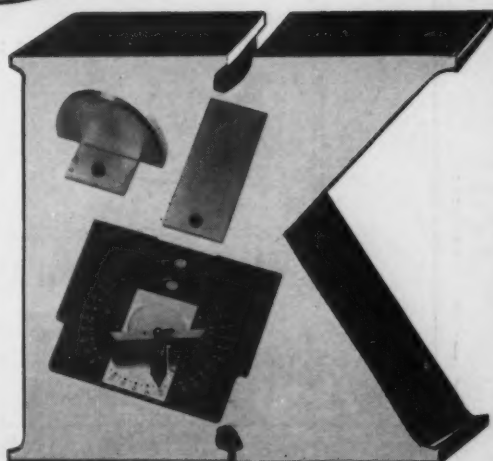
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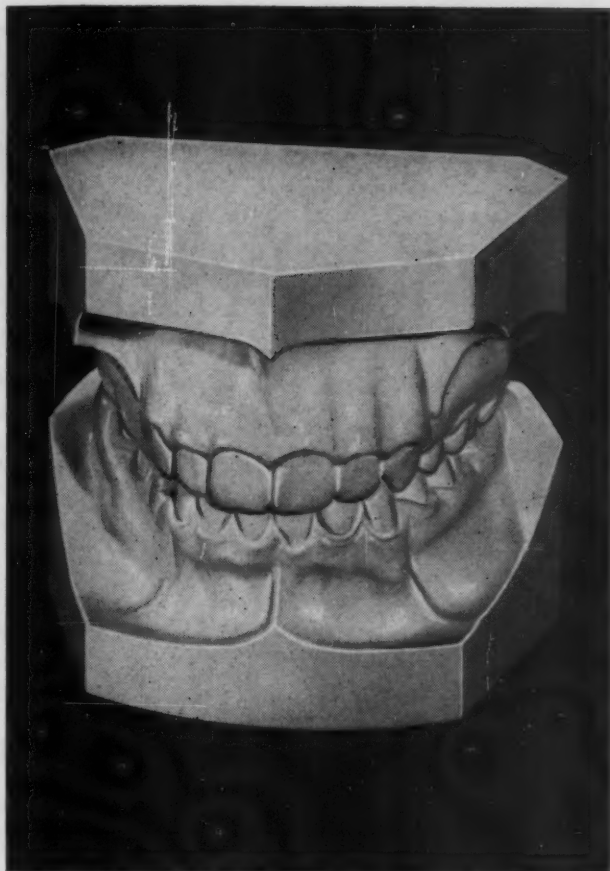
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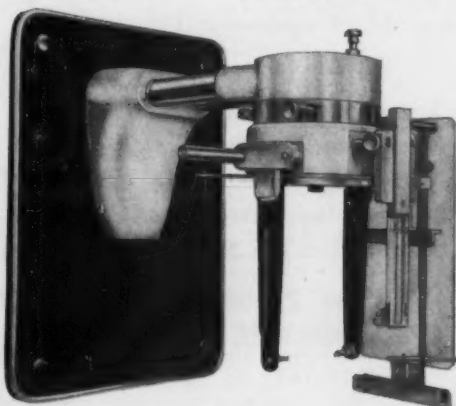
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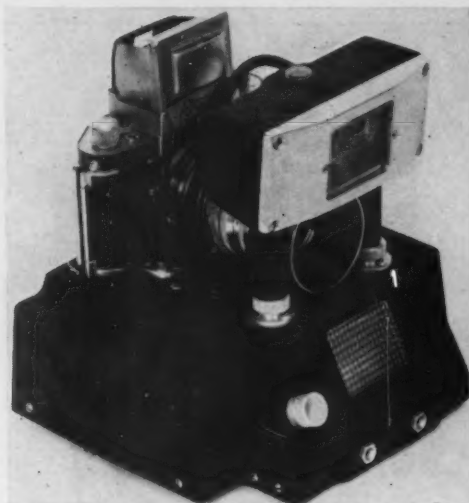
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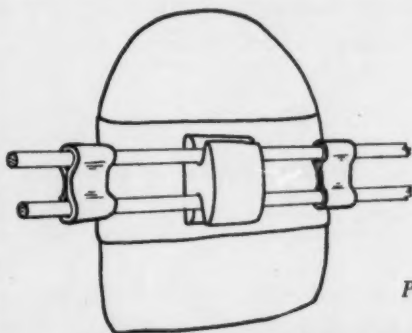
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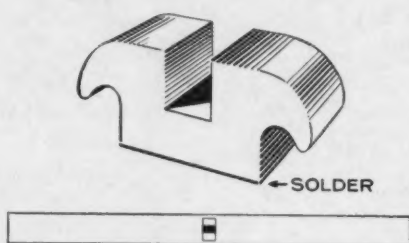
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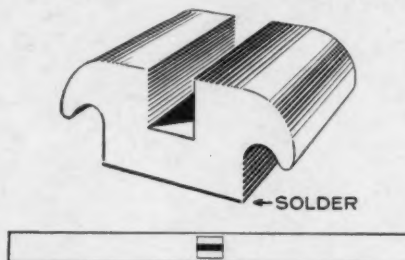
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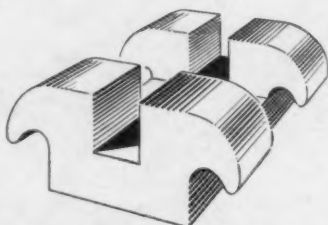
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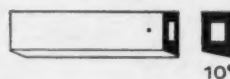
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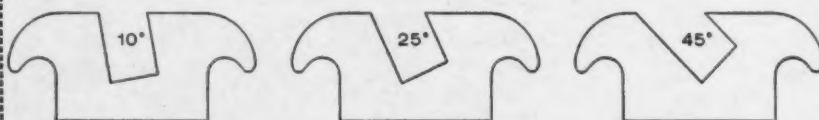
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